The Journal of the American Medical Association

VOL. XXVII. CHICAGO, ILL., OCTOBER 31, 1896. No. 18.

ORIGINAL ARTICLES.

ON THE TREATMENT OF FRACTURED SHAFTS OF BONE IN CHILDREN; SIMPLE, COMPLICATED AND COMPOUND.

Read in the Section on Diseases of Children, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY THOMAS H. MANLEY, M.D.

PROFESSOR OF SURGERY, NEW YORK CLINICAL SCHOOL OF MEDICINE. NEW YORK.

Fracture is, perhaps, the most common type of severe trauma incident to childhood, especially in the male sex.

When the shafts of bones are involved, although union is more rapid than in the adult and repair is more complete, there are several special features of treatment of them, to be observed in the youth, if we would avoid possible dangers to the integrity of the damaged limb and secure the fullest degree of strength and function in it after recovery.

Anatomic Considerations.—It should be always remembered, that the bones of a child are immature structures, neither the epiphyses nor the apophyses have yet fused with the shaft by osseous union; through the absence of full calcification, the bone possesses unusual resiliency and elasticity. Vascular and cartilaginous elements predominate in the osseous structures in infancy; both progressively diminishing as age advances. The cancellous heads are the centers of great vascularity; the periosteum thick and is everywhere ramified by vessels which course through it and penetrate the cortex through Howship's lacunæ. The medullary elements share in the activity of the nutritive forces, as is demonstrated by the bright crimson color of the bone marrow and its great proneness to bleed freely, when lacerated. Nutrition and growth of the bone shafts at this epoch of life are maintained, by *periosteal* and *endosteal* sources; *i. e.*, from the circumference and ends. Layer after layer of the myeloplaxes bud from the true bone roots, the cancellous heads, and are deposited in consecutive layers, on either end, preliminary to fusion and the formation of Haversian systems; while simultaneously from the circumference, the osteo-blastic layer of periosteum is steadily superadding concentric lamellæ, of neoblastic bone corpuscles.

The overlying soft parts are in a high state of nutritive activity; neither the effect of time, nor occupation, nor the degenerative consequences of various local or constitutional disease have made their impress on the structures of the limbs; arterial sclerosis, venous varix, or territorial obliteration of the capillaries have not yet appeared.

Although, in the young, growing limb the sanguinous supply is abundant, it is important to note that the volume of force of the blood-current in the great blood-trunks is not as great as in the adult, and accordingly in a corresponding degree, it is unable to resist the effects of pressure or tension.

Etiology of Fracture in Childhood and Youth.—Traumatic disorganization of bone in children more often results from direct, than indirect force; from the latter, we will more often find, epiphyseal separation or dislocation resulting; Colles' or Pott's fracture in them, is rarely, if ever, witnessed.

It has seemed that the shock attending the average simple fracture of a limb, was less in children than in adults. Muscular action as a conservative factor, plays an unimportant *role* in these fractures. As a rule force must be directly applied; or at all events in close proximity to where the bone sunders. This will explain why we so rarely see the shafts or apophyses shattered, after sudden tortion or twists contiguous to a joint.

I am not familiar with any constitutional disease in a child which predisposes to fracture. There is no doubt, but in the cachectic, rickety, syphilitic, or badly fed the bones are more vulnerable and prone to give way to violence; but then, the effects of malnutrition are widespread, involving equally the soft parts and organs, as well as the osseous structures.

It can not be said, therefore, that as a rule, there are any predisposing causes of fracture during the stage of growth and development; in this respect these fractures being widely at variance with the etiology of the same lesion, in the adult. That there is a strongly marked predisposition to fracture in some adult individuals no one can deny who has treated a large number of fractured shafts; but in my own experience with this traumatism in the child, I have never been able to find evidence to support the probability of predisposition.

It seems, however, that with those who have had a large experience in the treatment of broken bones in modern children's hospitals, a belief prevails, that there are dyscrasia tending to fracture in the young. Thus, Power speaks of osteopsathyrosis, or fragilitas ossium, rickets and even an inherited tendency, leading to fracture in young children. (Surgical Diseases of Children, D. Power, p. 160.) It is well to remember in this connection, that most hospitals for children are filled with unhappy waifs, illegitimate offspring and poor poverty-stricken orphans, with feeble constitutions, forming a class quite distinct from those more fortunately situated in the outside world, and not to be readily contrasted, in their morbid tendencies, with average fairly fed children, at home.

Morbid Anatomy.—In the child the nature and extent of tissue disorganization in fracture are not identical with the adult. As the degree of force necessary to break or crack the bone shaft is less, we will not so frequently find simultaneous laceration of contiguous parts, as the vascular or neural; the osseous elements being more elastic and containing more

organic material there is rarely shattering unless, great crushing force acts over a limited area; the bone being less brittle, the double bladed spurs seen in the oblique fracture of an adult, are not encountered, as the rent through the shaft is generally in a transverse direction. The periosteum being thick, and the muscular power comparatively feeble, marked displacement, over-riding of the fragments or surface deformity are not such prominent characteristics as in the matured man.

Joint implication constitutes one of their most serious features. Fracture through any part invested by the perichondrium on opening through the synovial membrane, or involving the "growing line," the epiphyseal bridge, in spite of what particular line of treatment is followed, may result in marked limitation of joint action, articular deformity, or permanent arrest of growth of the limb. It is probable that in all severe fractures, growth in the limb is in the abeyance, until after repair is complete.

In many cases of femoral fracture, shortening has been noticed by me, when perfect apposition of the fragments was effected, with ultimate solid union, without any deflection or bulging at the point of fracture; thus temporary arrest of growth was the only possible explanation for it. The shortening in some cases was slight, yet clearly apparent on measurement. Similar shortening occurs, after arthritic or osseous disease in children, and reasoning from analogy, we may expect to find it after fracture when there is long confinement in bed.

Fractures, or diastasis, contiguous to the arthritic structure give rise to difficulty in diagnosis and treatment, because of the copious, sanguinous extravasate into the peri-arthritic structures or the capsule and prompt diffusive inflammation, which so generally follows. At the complicated articulation of the elbow, the T. fracture through the head of the humerus is almost certain to leave some impairment in motion. In the process of repair, there is sometimes a hyperostosis, with a pushing forward and outward of the trochlear hollow of the olecranon; resulting in a disturbance of the mechanical relations between the articular surfaces.

Diastasis through the epiphysis, when the extent of displacement is slight, in my experience, unites more quickly than osseous fracture. But, when this occurs under fleshy parts like the shoulder or hip in the delicate or strumous, its recognition is not only difficult, but it may lead to arrest of growth or impairment of joint action. Such results, however, are exceedingly uncommon. None have ever come under my observation.

In connection with this subject of diastases or fracture through joints, in order that judicious treatment may be instituted, an accurate knowledge of the condition existing is necessary; and here is where the difficulty comes, for oftentimes this is practically impossible, as every umbiased, experienced surgeon must admit.

In epiphyseal separation of the humeral head at the shoulder joint, although some writers of fertile imagination and remarkable descriptive power of what does not exist, have laid down *seriatim* the differential features between this and bone luxation. Jonathan Hutchinson states that all, or nearly all so-called shoulder-joint dislocations are but epiphyseal diastases. This is no doubt an exaggeration, though not far from the truth.

In either epiphyseal loosening at the shoulder-joint intra-articular fracture or dislocation in the child, although the anatomic elements involved are dissimular, the reactionary efforts are quite the same in all; hemorrhage, laceration of adjacent soft parts, inflammation, exudation with consecutive fibrosis and extensive adhesions in all or many of the overlying parts, occurs in each equally frequent.

Compound Fracture in Children.—In the present state of our knowledge and the great advances made in the surgery of the extremities, the time has come, when compound, comminuted or complicated fractures in children, should be separately considered and their distinctive etiology, pathology and treatment should be taught in our medical schools. Nevertheless, the antiquated and vicious system of dealing with all types of fracture, in the various epochs of life, on the same principle, is yet adhered to, even in our latest text-books on surgery. It has been noted, that the limbs, during the evolution of growth, are organically, totally, unlike those of middle or advanced age, being less firmly set, highly vascular and elastic. The lower extremities of the child carrying a lighter body are comparatively exempt from those shocks and jars inseparable from advancing years.

The recuperative energy of the osseous system of the child possesses marvelous activity, for it can not only repair, but also reproduce or restore shattered or destroyed segments of a bone-shaft. Therefore, by the aid of antiseptics and by utilizing those osteoplastic procedures so elaborated and graphically described by M. Ollier, we are often enabled to preserve limbs, sometimes so mutilated, as to seem to justify immediate amputation.

Morbid Anatomy and Pathology of Juvenile Compound Fracture.—Compound fracture is less frequent in the young, than in the adult for several reasons. The first is, at this stage of life the occupations of children are not so dangerous. Serious injuries most often befall them, however, through their venturesome tendencies and heedlessness. Proportionally for their volume, the solid elements of their bone shafts are better protected by the enveloping parts, which are highly elastic; as their fractures are mostly transverse, muscular action is weaker and the periosteal investment thicker, displacement after fracture is slight. The younger the living tissues the greater their resistance to the influence of pathogenic germs which may infect their protoplasmic elements, every thing else being equal.

Compound fractures only become grave injuries in a child, when the violence has been so great as to totally destroy the limb, or when large vessels have been opened and a considerable quantity of blood has been lost; as even moderate exsanguination in childhood is often attended with alarming shock.

The loss of a considerable area of integument by primary violence or secondary gangrene is a serious complication. The skin can never be reproduced, but frequently the bone can. The shock succeeding compound fracture in children is usually greater than in the adult, and the depression of the vaso-motor system is so pronounced that a marked pallor and depression of temperature pervade the entire surface of the body. Compound fractures which open into the joints, when sepsis is prevented and the vascular current is intact beyond, often do suprisingly well.

Several such injuries involving the elbow and ankle joints of children have been under my care,

When there had been no loss of bone, whether the fissuring of bone extends into epiphyseal line or not, it is remarkable what a large degree of function is restored. What frequently imparts a serious aspect in these cases is when the patient is strumous, and when inflammatory changes degenerate into widespread, suppurative infiltration, with sloughing.

In all these cases of compound arthritic fracture, as in the simple variety involving joints, more or less inevitable displacement of the fragments, hyperostosis in callous formation and organized or semi-organized tendino-muscular adhesions, for some time after osseous consolidation, more or less lock the joint and induce muscular atrophy. In the youth, all of those pathologic conditions, as a rule so serious and often permanent, in the fully developed individual, are largely minimized in the ultimate effects by appropriate treatment and the innate tendency of the economy to restore adjustment and a large degree of function in an injured part.

Treatment—This brief review of the subject will not permit anything like an extended notice of the subject of diagnosis, something which must always precedes definite specialised treatment, but to omit it altogether would be to vitiate, largely, whatever value the present contributation may possess. It may be said, as a general rule, that fractures in children are most difficult of detection. In fact, in fractures contiguous with joints, it is sometimes quite impossible to recognize them. In this class, the safest course to pursue is to proceed on the assumption that there is a fracture, and apply treatment. It has been pointed out, that immediately after many fractures, tumefaction, sanguinous extravasate and muscular spasm, render examination severely painful, difficult, and sometimes indefinite. More than once, when a case of injury, assumed to be fracture, has come under my care, when by moderate manipulation its detection could not be determined, I have made a show of adjustment and set the limb aside, under soothing dressings until the following day, when the real examination was made. Almost invariably now, crepitus could be detected and the quality of the osseous disorganization ascertained with the infliction of no severe pain.

Incision as an aid in diagnosis of fracture of a bone shaft is a procedure of questionable expediency. Notwithstanding what asepsis may prevent in flesh wounds, when we deliberately open into a fracture of a bone shaft, we introduce fresh complications. We at once make a simple, a compound fracture and expose the parts to the dangers of suppurative infiltration or necrosis. In any other than rare and exceptional cases as a diagnostic resource, the incision should be condemned. A practical knowledge of the general rules of diagnosis will seldom fail us without resorting to this extreme measure. It is only necessary that the examination be made with gentleness and thoroughness; and when the suspected fracture be located contiguously with the shoulder or hip-joint, the patient should be placed in a position of complete muscular relaxation on a table or in bed, on the back. In this connection it may be well to give a warning against the possibilitity of diagnosing fractures which do not exist.

It certainly is no reflection on one's knowledge or skill when in doubt about the existence of fracture to frankly confess it to the patient, his friends or relatives; but it becomes a reprehensive line of conduct to decide alone, on a case and put up the limb in an apparatus or adjustment, for the cure of an imaginary condition. Such mistaken cases have come under my observation in nearly all the long bone shafts, at the wrist and the elbow, the clavicle, scapula and neck of the humerus, the femur, the tibia and fibula.

Pulmonary anesthesia is an invaluable adjuvant in diagnosis of various fractures. It may be laid down however, as a law, *that when detection is only possible by this agent in the case of bone trauma, the extent of damage is not great, and the establishment of definite diagnosis will not materially effect treatment.* It is very seldom necessary in the youth, and is not without its dangers. We usually resort to it, in order to avoid the imputation of ignorance or neglect in complex cases, perhaps also as an aid in reduction or setting.

Treatment—Simple Fracture.—The limb of an infant or youth is more intolerant of protracted restraint or severe pressure than the adult; with him are commonly incomplete fractures, or non-displacement of the fragments, and hence not a few of them, are overlooked, or not discovered, until a large callus or deflexion attracts attention. Although primary union of bone is prompt, the uniting bone slowly calcifies, and the tendency to bowing remains for some time after apparent union, at the sight of fracture.

A mistaken impression prevails, that treatment of fracture should be instituted on the spot, *sur le champ*, as though the limb must perish or fall apart, unless it be at once placed in a rigid adjustment. This view has often led to most disastrous consequences and calls loudly for the voice of a Pott, or of a world-famed luminary, like Senn, to condemn it.

The aim to be sought for *immediately* after simple fracture, is to place the limb in a comfortable position. In none is this more important than in the tender susceptible child. Sometimes, this end is effectively accomplished by immediately setting the bones and splinting the limb, while in others the best splint is a bed, the limb well bolstered and enveloped in soothing dressings, until the following day or such time as the inflammatory disturbance has disappeared, tumefaction has diminished and muscular spasm has passed off. Nothing has been lost by this delay, as the work of repair is impossible until the subsidence of local engorgement.

The treatment of uncomplicated fracture limbs in general embrace but a few broad principles, which apply to all ages; they must, under certain conditions of age and environment be modified.

After all severe fractures the system sustains more or less shock. The body needs rest, no matter whether it be the upper or lower extremity which is involved. The patient should *first* be treated, then his injured limb. This should be comfortably adjusted, for if severe pain persist after the limb has been set, something is wrong.

On Splinting.—As there is seldom much displacement, if any, in several varieties of fractures in children, we will do enough in many cases at the first visit, to simply place the limb at rest without any other investment than a bandage, until after the primary callus is formed, when a support is adjusted to obviate deflexion in the ossifying stage. Osseous apposition of the fragments with retention is desirable in those cases of fracture attended with much displacement.

In order to realize this end or to bring the divided

ends of the bones into as convenient contact as possible and so retain them, we depend mainly on two or three things: the first, the most important and more valuable than all others combined, is *muscular relaxation*, or postural treatment. This permits unfettered liberty of the circulation, and the highest possible activity of the nutritive processes. In the lower extremity, for the leg, the foot may be used as a counter-extending force; in the thigh, both the leg and foot. In the arm, the forearm is the counter-extending weight. With the child we have little to fear from bed-sores, and he bears enforced confinement with less impairment to health than many who after middle life accumulate additional flesh. Desault was the father of the method of fracture treatment now so generally adopted, in which the principles of muscular relaxation is so generally discarded. Long splints are applied and artificial extention is generally employed.

To enter into the comparative value of various methods would involve a large task, which can not be undertaken here, but, after fifteen years experience in a large traumatic surgical service in hospital and a fair share outside, I am convinced that mechanically splinting and confining *all* fractures is an error; that the results are not as satisfactory as they should be and that the time is not far distant when Pott's principles in fracture treatment will again reign supreme.

But even now, in fractures contiguous to or involving the articulations, our sole reliance is muscular relaxation and postural treatment.

Overlaying apparatus in joint fractures are little more than masks, which practically accomplish nothing. They, however, fulfill a psychical affect, something often highly necessary with the fault finding and supercilious.

Early passive motion, in my experience, is highly desirable in all fractures of children which involve the articulations. Not a few distinguished surgeons are opposed to it, in my judgment very much to the disadvantage of the injured.

Marked deflection of long shafts, after treatment is completed, very justly reflects discredit on the attending surgeon, when the child is constitutionally sound. It is most frequently seen in the female.

We may find that the patient has a lump of bone projecting outward where the shaft has the least muscular investment, the limb is very markedly shortened, and the patient walks with a limp. It is not my intention to reflect on the surgeon for this blemish, for as a sequel of fracture treatment it may occur in the hands of anyone; only it should not be allowed to remain if of an aggravated type.

It is surprising how easily it is overcome if taken in hand early. The bone is then pliant and by the use of moderate force can be easily pressed into position, the bowing overcome and length restored. Some of these cases of deflexion are dependent on an organic defect in the osseous elements, a species of malnutrition not well understood; in all instances, however, it is well to favor consolidation of the fragments by close attention to the hygienic surroundings, proper nourishment, tonic and reconstructive medicines.

Massage, bathing, kneading the muscles and frequent changing the position of the patient are helpful aids; and as Championiere has lately demonstrated, entirely innocuous as disturbing agents of the approximate fragments.

On the Treatment of Complicated Fractures or Open Compound Fractures.—Although every fracture not attended with an open wound is designated "simple," under very many circumstances it leads to a wrong inference; hence it would seem both desirable and necessary that in every instance when the arthritic, neural or vascular structure, to a considerable degree, share in the traumatic disorganization of bone, the word *complicated* should be substituted for "simple" and the word *open* for "compound."

To the inexperienced the word "compound fracture" has a most serious significance, while as a matter of fact not a few of the cases embraced under this class recover with better limbs than the "simple." And, of the latter, occasional instances occur, when the damage to the fractured limb is so great, as to, later, demand amputation or lead to a wasting or anchylosis of the limb.

Modern measures, inhibiting germ infection, great advances in osteoplastic science, combined with perfected mechanical adjustment and prothetic devices, under no circumstances justify the sacrifice of a limb or a part of a limb after an injury in a child, unless the parts have suffered *total* death by violence.

In open, compound fractures of the limbs our first concern must be to arrest hemorrhage. This should be done as far as possible by exposure, ligation, torsion or immediate compression of the spouting arteries. When bleeding is venous or parenchymatous, moderate tamponage and bandage pressure will answer for its suppression; but under all circumstances very hot water as a styptic or protracted elastic compression, with Esmarch's bandage, as a hemostatic agent must be condemned; the former for its destructive action on the vital structures and the protoplasm, and the latter, from the danger of gangrene following.

Our next step is cleanliness and all that it implies in a strict surgical sense. Now, we will endeavor to comfortably adjust the fragments and provide them necessary support, under appropriate dressings until general and local reaction is established. In the average case of severe open shattering of bone, with more or less displacement and extensive mangling of the tissues, the safest course of practice to pursue is not to undertake too much at the primary dressing.

From a theoretic standpoint this advice may seem untenable and injudicious.

The parts, it is true, are now more or less benumbed, and may be handled with less pain; yet in all cases in which any tedious manipulation is necessary an anesthetic must be employed. But in all these cases severe constitutional shock is present, muscular spasm drags on the fragments and infection is so constant that primary union seldom follows without suppuration and limited gangrene of the damaged parts.

Better by far, in all very serious cases of this class to be contented with temporary adjustment of the mangled limb, secure against fresh infection and hemorrhage for at least twenty-four or forty-eight hours or longer, unless special indication call for a change.

The question as to what we shall do with the displaced fragments to secure their surfaces in permanent contact, by wiring, pegging or riveting; what fragments we shall return and what detach, how we shall place the osseous structures in position most favorable to regeneration, when there has been much loss of bone substance, belongs to the subject of

osteoplasty, a branch of the healing art which every surgeon must familiarize himself with and master who would perform his whole duty to his patient. As this subject is too large to be considered in this brochure, it is enough to say what my own experience long ago convinced me of, viz., that under no circumstances should any fragments of bone be removed that preserve an intimate attachment with the soft parts. In the upper extremity our every effort should be strained to preserve every possible particle of bone tissue that possesses a cutaneous investment, and no excision or division should be done through any other than parts hopelessly devitalized.

Modern prothetic appliances have done much to substitute a sacrified limb, at least for appearance, though as an appendage for the lower extremity they sometimes support the body and carry it; nevertheless, let no one deceive himself into supposing that any artificial support can ever fulfill the purposes of a natural one, and needlessly sacrifice any part of the lower extremity.

There are several reasons why a severe fracture through any part of the lower extremity is more difficult to treat than in the upper. It is here where fracture is very common, and in railway or other serious accidents the greatest extent of mutilation is inflicted. Yet, when we can provide proper attention to a case it is surprising what results we may realize in many of the frightful cases of bone disorganization.

As an example, I might mention one case of open fracture in a child of 6 years, run over by a street car, in whom the entire tibial shaft was so shattered that it was entirely shelled out through the long breach in the tissues. Only the epiphyseal ends and periosteum remained. In one year this entire shaft was regenerated; there was no shortening and no limping. In another, a young adult, the bones were so smashed that a little more than four inches of the shafts of the tibia and fibula on damaged side had to be removed, and the widely separated ends pressed together. In six months union was complete. By a rise on sole of shoe shortening is compensated for, no crutch or walkingcane is used, and last autumn he won a wager, walking from One Hundred and Twenty-fifth Street, in Harlem, to Coney Island, a distance of about twenty-one miles, leaving Harlem at 6 in the morning and returning before 6 in the evening. This he accomplished with ease.

We can secure surprising results in most any description of fracture in the leg of a child, below the knee, provided the circulation be intact; but when the fleshy parts are torn open in femoral fracture, we have good grounds for the most serious apprehension.

The extent of shock is always very great, in compound, femoral fracture, and in most cases there is considerable loss of blood before efficient surgical care can be rendered. In spite of anything that we can do to prevent it infection will set in and spread, always endangering life through infiltration, resorption and pyemia.

There are several varieties of fracture of common occurrence in the adult, rarely or never seen in the child. In them I have never seen a fractured patella or a Pott's fracture. One instance of intracapsular fracture at the hip has come under my care, in a youth of sixteen years. Subsequent to the injury necroses of the surface of the distal fragment developed and provoked suppuration. On incision, through the anterior plane of muscles, the capsule was opened and the neck was cleared away and the head left. The operation was performed four years ago. The patient is now a full-grown man with a very useful limb, except for about three inches shortening.

I never yet met with a case of Colles' fracture in a child, although some authors speak of it occuring during the stages of growth. I doubt their accuracy of diagnosis. Colles' fracture almost invariably leaves deformity through rupture of the internal lateral ligment and displacement outward of the head of the ulna, impaction and diastasis of the radical head.

Deformities, therefore, should be rarer after juvenile fracture, functional restoration better and restoration of strength greater after treatment than with those approaching or after the meridian of life.

In conclusion, as far as treatment is concerned, it may be said that as applied to so-called "simple" fractures, or the complicated, involving the joints, in the child there has been no special progress made in late years, the mechanical problem is not settled and our best authorities are not in accord on the question of attitude or position of the limb, on immobilization, extension and counter extension. The fact is, that mechanical aids in fracture have but a limited application, as we are dealing with a living machine not subservient to any physical laws in its vital processes.

Enduring progress only has been made with the complicated and open fractures, in which, by adoption of antiseptic methods and osteoplasty, safe conservatism is possible, and now we are enabled to preserve limbs formerly condemned to amputation or a crippled condition, which rendered them little more than useless.

DISCUSSION.

Dr. ELLA E. BARNES, Birmingham—I would like to ask Dr. Manley if in the German boy there had been a growth of the other limb sufficient to make the shortness appreciable?

Answer—About an inch.

Dr. BARNES—Will time ever overcome that by the extra use of that limb? Suppose a high sole were put upon the other limb and this limb allowed to swing, will the shortened limb ever become longer?

Answer—I am not able to inform the Doctor. As far as my experience goes, there is no remedy for shortening. We know that the limb would stop growth during the process of repair.

Dr. DANIEL H. CUNNINGHAM, Chicago—I would like to ask Dr. Manley the manner in which he applies his splint, or what splint he uses to keep the limb quiet and prevent the edges of the bones causing laceration.

Answer—I have nothing special. I adapt treatment to each individual case. Some families can afford splints and others can not. We should not wed ourselves to any particular splint in the adjustment of the limb.

Dr. A. C. COTTON, Chicago—I want to ask Dr. Manley would he make any objection to blanket splints?

Answer—They are excellent.

Dr. MANLEY—We have to consider the matter of expense. There has been devised a splint made from strawboard which acts admirably in children. It is very light and can be easily cut down with the knife, and by submitting to hot water it softens and you can shape it to the limb. I think it is about fifty cents a sheet and a sheet is enough to make about a dozen splints. If I could not get anything else I would use plaster of Paris, but I do not believe there is anything else has given us so many cases of distortions and deformities. When you remove it you have to give the limb more or less jar to get it off. The chewing with the knife, or whatever it may be, causes

more or less jarring of the limb, and you can not put a plaster on the limb from which the limb will not fall away and the dressing will become loose. Particularly in fractures of the forearm in children it is important to inspect the limb every day. I have known plaster encasements, in which there was no rise in temperature and everything seemed to be going on splendidly, but after ten days when we cut down through the plaster, both bones were found projecting through the skin, and black. So I believe the plaster has a very limited use in children. It is unyielding and you might just as well put the limb in a vise; and after considerable disorganization of the soft parts, in fracture, there is a great deal of tumefaction and it is important there be room for this. The plaster simply puts the patient in torture. When a fracture pains there is something wrong about it, but with the plaster applied, we have to cut down through the hard, rigid plaster, shaking and jarring the limb and causing more pain than ever. I have a positive prejudice against plaster, except in occasional cases.

Dr. J. A. WORK, Elkhart, Ind.—I have had some cases where I did not expect to save the limb, more particularly the fingers and toes, and I am glad to say the results were so good I am ready to attempt to save almost everything. As to splints, I use almost exclusively the binder's board. What do you think of the binder's board, Doctor?

Dr. MANLEY—I like it very well.

Dr. WORK—It is soft and pliable while wet and you can adjust it very well, indeed. You can allow for distention, while the inflammatory process is going on, and after the inflammatory process you can retract the splints to the limb. If you have a perfect cast of the limb, you have your limb in perfect shape. I think the wet splints have a tendency to keep down the first inflammation.

Dr. C. G. SLAGLE, Minneapolis—Dr. Manley has spoken of the shortening, which might sometimes help us out in suits. It appears to me that if the child is confined to bed two or three months, the sound limb would grow rapidly while the growth of the affected limb would be largely suspended. I have been surprised sometimes at the shortening, but this explains it nicely. As to setting the limb, the Doctor is very conservative. But I suppose, Doctor, if you were called immediately you would set the limb, but after the swelling began you would not do so until the swelling subsided.

Dr. MANLEY—As the first principle we should put the limb in a comfortable position, and that would imply setting and leaving the limb in a temporary dressing, not putting the permanent dressing on until the swelling is over.

Dr. A. C. COTTON, Chicago—The remarks have brought out that no absolute rule can be devised or laid down to fit surgical procedures. We should let the limb alone and put it in a comfortable position, if only on a pillow. If we want union by first intention, the ends of the bones must be approximated, nicely coapted. Although we get relief from pain by putting the limb in a comfortable position, unless we approximate the end of the bones we will not get primary union. We might have a dozen cases without that condition, while in the thirteenth it might be found. A whiff of chloroform could be given, the ends approximated and a splint applied. The Doctor expresses my views of those of plaster of Paris dressings. I suppose the orthopedic surgeon, with the necessity for rigid retention apparatuses, could hardly get along without the plaster, but he does not have swelling we have to deal with.

Rhinopharyngolith.—This is the name given by Janatka of Prague to a body removed by him from the naso-pharyngeal cavity of a nine-year old boy. It was found to consist of a tailor's thimble, which the child was supposed to have swallowed when he was one year old, and had thus remained imbedded in the nasal cavity for eight years, considerably disintegrated and coated with calcium carbonate and calcium phosphate. It had caused difficulties in breathing and hearing, and a tumor had been diagnosed.—*Wiener Klin. Rundschau*, September 20.

OBSERVATIONS IN CASES OF EPILEPSY FOLLOWING INJURIES TO THE HEAD IN INFANCY, CHILDHOOD AND EARLY YOUTH.

Read in the Section on Diseases of Children, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY W. A. DIXON, M.D.

RIPLEY, OHIO.

In introducing this subject, the purpose is to express my convictions arising from observations in my own practice that great care should be used in rearing children, that the head may not receive injuries, lest epilepsy follow as a result.

During my first years of practice I had no conclusions of my own as to the liability of epilepsy to follow injuries to the head in early youth, and sought to discover in each case presented to me a cause in heredity, reflex irritation and the many other causes given in the text books.

In after years, however, when the child that had received injury to the head was brought under my care on account of epilepsy, the importance of this subject became apparent to me.

I can cite a number of cases whose history I am personally familiar with from the date of the injury received to the development of the epilepsy.

I take no censure to myself in the treatment of the injuries at the time of their occurrence, because epilepsy developed in after-years, and cite the following cases, not to speak of treatment or of the character of the lesion, but of the fact that epilepsy did follow the injury, and in the absence of any other known or suspected cause, must be considered the reasonable source in each case, and therefore that physicians should be under obligations to teach parents and others in charge of children the necessity of guarding against all injuries to the head that epilepsy may not follow as a result in after-years when the brain develops, the sutures unite and expansion or growth of the cranium ceases.

Case 1.—J. R., a boy aged 5 years, was kicked by a horse, fracturing the left parietal bone. There was depression and symptoms of compression. The fragments were removed, the depressed bone elevated. The boy rapidly regained consciousness and made a good recovery with nothing to indicate that he had received so serious an injury. At the age of 24, when he had attained to full growth in body and mind, without any premonitory symptoms he fell to the pavement in a fit of epilepsy. His condition rapidly grew more and more grave, so that in two years' time he consented to an operation of trephining in the hope of finding relief. Dr. P. S. Conner trephined, finding beneath the site of injury within the membranes a cystic tumor large as a medium sized orange.

Case 2.—W. K., aged 6, was kicked by a horse on the frontal bone over the left eyebrow, causing slight depression with symptoms of concussion but not compression. He made a rapid recovery and exhibited no results of the injury, until arriving at the age of 20, he was seized with epilepsy, which continued to become more and more aggravated during the three years following, when he died from exhaustion.

Case 3.—G. M., aged 10, was kicked by a horse in the middle of the forehead, fracturing and depressing the bone, causing deep coma. The fragments of bone were promptly removed, and the depressed portion elevated. The coma was quickly recovered from. Recovery was rapid, with no evidences of the injury remaining. At the age of 20 epilepsy developed. He is still living and the victim of frequent attacks.

Case 4.—L. P., aged 8, was thrown from a horse, striking the crown of the head upon a small stone in the road. There was laceration of the scalp over the left parietal bone, and slight depression but no symptoms of compression, and no line of fracture could be determined. Recovery was prompt. At the age of 28 epilepsy developed. The paroxysms have continued to increase in severity until now the patient is a complete physical wreck.

Case 5.—W. B., a boy aged 12, stopped on the sidewalk to tie his shoestrings. On attempting to set one foot on a step, the other slipped from under him, causing him to fall backward, striking the occiput violently on the pavement. There were symptoms of concussion, lasting several hours. In a short time epilepsy developed and continues to the present in an aggravated form.

Case 6.—J. F., aged 8, fell from a swing, striking the head upon a stone, lacerating the scalp and producing symptoms of shock which lasted several hours. There were no symptoms of compression nor fracture. Recovery was apparently perfect. At the age of 18 epilepsy developed and continued for about three years, becoming more and more violent until death.

Case 7.—J. R., at the age of 5, fell from a fence, receiving a blow upon the head, producing violent shock, and was in a state of stupor for several days. At the age of 16 epilepsy developed and continues to the present.

Without reciting each case similar in most respects to the foregoing, I can call to memory many other cases of injury in whom no history of heredity, specific disease or reflex neuroses of any character whatever can be traced as a cause.

Younger children, in my judgment, are in danger of epilepsy upon meeting with what may be termed every-day casualties, as falling down stairs, out of the high chair, off the bed to the floor, from the porch to the pavement and other similar accidents where the head receives the blow.

I can recall quite a number of epileptics in boys and girls to whom I was called at the time of such accidents as spoken of above at the crawling age of childhood. Some of the worst epileptics I have seen have no history of cause beside the fall and consequent injury to the head of the infant.

Meddlesome midwifery, it is to be feared, must be held responsible for some cases, the most wretched and hopeless we are called upon to witness, the forceps having inflicted injury to the head.

Prof. Chas. D. Meigs in his day, foreseeing the tendency to wantonly use the forceps, charged his pupils to remember that the best obstetrician was he who stood by his patient with his hands folded behind him.

There are dystocias when the forceps must be used, when it would be criminal to not use them, though epilepsy in the child be sure to follow. The point is this, that the utmost skill and care should be used to avoid injury to the fetal head lest epilepsy may develop in the child.

I have seen two cases, not my own, it is reasonably certain resulted from injury in forceps delivery, and two more strongly suspected to owe their origin to the same cause, every other history of cause being absent.

My experience is largely among rural people where the forceps are not often required or resorted to, and where of course epileptic results would be rare from such a cause, but if two cases come under the observation of each city and country physician during a quarter of a century, see what a vast army of epileptics follow in the wake of the forceps. Epilepsy merits the attention of the physician from every standpoint. Large numbers of epileptics are in every locality. They are of all people the most unfortunate. Too much can not be known concerning it. How impotent all physicians confess themselves to be when confronted with it.

In cases from trivial reflex causes treatment may be successful. In confirmed cases medicines avail so little that both physician and patient tire of treatment.

The surgeon on account of so small percentage of favorable results in the most hopeful cases operated upon is held at bay. So the most rational procedure is to adopt preventive measures.

If heredity, insanity, inebriety, specific infection and so on among the ancestors are found to be causes, the gravity of the affection demands that means be employed to curtail the transmission of the disease to posterity. Knowing injuries to the head to be a fruitful source, all should unite every effort to teach and impress upon parents and others in charge of children to use all precautions possible to protect the child's head from every sort of injury, epilepsy having been known to follow what seemed to be a slight injury to the head. It is not the purpose to speak of any theory of pathology or morbid anatomy.

The literature upon the disease is enriched by the observations of eminent men in every age and country. The same views are not long held by any student, for experiments and postmortems are likely to revolutionize any theory previously announced.

Most writers regard traumatism overestimated as an exciting cause. Experiments of any kind that disturb the cardiac or cerebral functions may excite convulsions and establish any theory desired.

In relating cases I selected those in whom a record in the ancestral line, of heredity, insanity, inebriety, tuberculosis or specific infection did not exist, so that the fact of injury alone could remain as the factor, the kind of injury that can be in a great measure avoided by watchful care in the rearing of children.

PETIT MAL IN CHILDREN.

Read in the Section on Diseases of Children, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5–8, 1896.

BY LOUIS FAUGÈRES BISHOP, A.M., M.D.
NEW YORK.

Idiopathic epilepsy is eminently a disease of children, occuring in more than three-fourths of the cases before the twentieth year. So much is this true, that in epilepsy in older people, we always institute a special search for a local cause. Of the causes of epilepsy we are not to treat in this place, nor indeed of the typical severe cases, but because we separate petit mal, we must not fall into the error of supposing we have to deal with a different disease. Nor is it always easy from the description of parents, when there is no opportunity of observing the attacks, to be sure into which group the particular case should go.

Though not a common form of manifestation of epilepsy in children still among a large number of cases there will be a certain number in which the disease at least in its onset takes this form. On account of its comparative rarity and because of the proneness of young children to convulsive attacks of various kinds whose etiology is clearly to be found in local irritation, these minor attacks of epilepsy are seldom recognized by those whose attention has not been particularly called to the subject.

There are certain physiologic considerations that must have weight in our diagnosis. Up to about three years it is difficult to make the diagnosis of petit mal because the physiologic irritability of the nervous system is so great that we can not exclude a sufficient cause of irritation. After about the age of three years the nervous system has obtained a degree or stability that makes the frequent recurrence of convulsive seizures an indication of epilepsy. Of course, if there is a family history of a tendency to such

attacks at a later period, which have not proved to be epileptic, this circumstance must be given due weight. As in older people we must exclude kidney disease and injuries to the brain.

In addition to a due appreciation of this period of irritability we need to have a more symmetric comprehension of epilepsy. Petit mal is not one disease and grand mal another, but they are different manifestations of the same disease. It is for the sake of emphasizing petit mal to the dignity of true epilepsy that this study of that particular form of epilepsy in children has been undertaken. The attack of petit mal is a sudden temporary unconsciousness, often accompanied by certain other phenomena. In a large number of cases the eyes become fixed, the face pale, and in a moment the patient assumes his ordinary conditions; in others, the patient talks in a wild manner, often upon some subject entirely disconnected with the surroundings present. The patient may perform some curious automatic action, or go through with some particular act while in the epileptic state.

A very curious case came to the Vanderbilt Clinic, New York City, a few days ago. The child, 7 years old, had frequent attacks in which she suddenly seized her head by the hair on either side, and then there was a jerky motion of the arms and head, at the same time one foot was raised as high as possible and the child would stand for a moment on the other, but if not supported, would fall. This occurred while under observation about every fifteen minutes. The child was unconscious during the early part of the attack, which lasted probably during the fraction of a minute. Another child also seen at the Vanderbilt Clinic recently, suffered a compound fracture of the skull a years ago. A few weeks ago she developed attacks, which come on every night about ten o'clock, after she had been in bed an hour or two. She wakes out of her sleep in a fright, and almost immediately becomes rigid and apparently unconscious.

An attack of petit mal may assume a great variety of forms. A mere momentary blurring and loss of consciousness at frequent but irregular intervals, or sudden sensations of fright without apparent cause, or a feeling of something in the epigastrium and rising in the throat. Thus in a case coming under observation while preparing this paper, a child of five years old had convulsions during the first two or three months of life, and since that time had been subject to attacks at intervals, the mother says "a thousand a day," during which the child's head suddenly drops, the arms are stiffened, and after an attack of momentary unconsciousness the child goes on as before. Such a case is of sufficient severity to attract the attention of a physician, and to make a diagnosis perfectly easy, but it can be seen that attacks of the same nature occurring at infrequent intervals, and of which we have only the account of parents, would nearly always be disregarded. When associated with *grand mal*, or when it has been followed by *grand mal* later on, the diagnosis of true epilepsy is of course very much more certain; still when studied carefully these cases assume a certain definiteness, which it is hard to convey by a written description.

The diagnosis must rest on the recurrence of the attacks irrespective of gastric irritation, the fact that they are not cured by the removal of sources of irritation, the persistence of the type of the attacks and the occasional recurrence even in quite young children of the epileptic equivalent, *i.e.*, periods, during which instead of loss of consciousness, the patient does and says things entirely disconnected with the time and place. The attacks must be distinguished in very young children, first of all from convulsive seizures due to local irritation. As we said before, under three years except in very well marked cases this can hardly be done.

Simple vertigo may resemble petit mal but the affection of consciousness is usually described as somewhat different. In vertigo there is a characteristic feeling as if objects were whirling around. The child says, "the house is going around." In epilepsy there is more the sensation of simple blurring or confusion. Vertigo is preceded by a period of weakness, while the onset of petit mal is always sudden. The patient is stiff for a moment, stares, and there is a momentary loss of consciousness, but the attack passes over as suddenly as it came, and he goes on with the occupation in hand. In vertigo the body is limp and the process is more gradual. In petit mal the pupils are dilated and the eyes immobile. We must distinguish hysteria, which occurs frequently enough in children. This may be done by the tightly closed eyes, the tremulous lids, the persistent rigidity, but especially by the existence of hysteric attacks of other types. Petit mal may occur every few moments for years without changing its form of attack. Of course, this rule is not without exception. Thus in a young person at present under observation attacks of petit mal are sometimes replaced by short outbreaks of ill temper, which are entirely foreign to her ordinary disposition.

While we have begged the question of a certain diagnosis of petit mal during the first three years of age, yet cases from time to time have come under observation in which a study of the particular case has convinced us that it was one of true epilepsy. Its frequency during this period of life is shown by the statistics of Gowers, who found that 12½ per cent. of all epileptics had developed the disease before three years, and of these one-half had developed during the first year of life. In our own histories we find fairly frequent instances of fully developed epilepsy in later life having originated as petit mal in children. This history is brought out more often if, as with us during the last few months, we have inquired particularly for symptoms of petit mal antedating the onset of convulsions. It would seem especially interesting to inquire as to the early existence of petit mal, in those cases in which under treatment, petit mal is substituted for the typical severe convulsions. Some of these cases impress one as if the attack of petit mal was a development of an epileptic aura, which stopped short of the convulsion. In some very rare cases there has been a distinct sensory aura preceding the attack of petit mal.

Petit mal is essentially a chronic disease, and for that reason it is difficult to formulate the best plan of treatment. However, special stress should be laid upon the care of the stomach and all those measures which are included under the name of hygienic management. As to drugs there has been a great variety recognized. Petit mal is more intractable than the severer convulsions, but the same treatment which has been found best in these has on the average given the best results in petit mal. After experimenting with a great variety of drugs it has seemed that bromid in moderate doses has given on the average the best results. Occasionally a case has shown

improvement when under nitro-glycerin. Belladonna in our hands has never given any results, and the same is true of borax, digitalis, and a number of other drugs.

If our conception of epilepsy as a stormy and ungoverned discharge of the motor cells of the brain be a true one, which belief is strengthened by the fact that seizures are more likely to take place in those who have been sleeping, or who habitually sleep too much, why would it not be possible by systematic training of these cells to diminish the liability to such outbreaks? Systematic exercise of such a varied kind as would exercise all the muscles of the body might thus have such an effect beyond that due to the mere improvement of the general physical condition.

The parents of the child should know of the very possible persistence of the affection into adult life, so that everything should be done to render the disease as bearable as possible to the little patient. The friends and attendant should be instructed to speak as seldom as possible of the attacks to the child, and should be thoroughly instructed that attacks of petit mal are entirely beyond the control of the patient. An effort should be made to treat the child as nearly as possible as other children, not restricting it of its liberty, or treating it like an invalid in any way, except as far as is necessary to carry out the proper regimen and treatment.

DISCUSSION ON PAPERS OF DRS. DIXON AND BISHOP.

Dr. THOMAS H. MANLEY, New York—You know how unsatisfactory and discouraging the teaching of obstetrics to the medical student has been. It has often occurred to me it would be better for humanity if we had no such science as the art of midwifery. You will remember it was claimed the mortality from sepsis had been reduced to practically nothing, through the adoption of the antiseptic treatment, washing and flushing the vagina precedent and antecedent to confinement; and then, again, we have been taught later the position we are coming back to, the best thing to do is to do nothing at all in the way of using solutions about those passages. The tendency is, that the ideal man is the one who can make a diagnosis without passing his finger in the vagina. Then we will not have to deal with a sepsis, because pathogenic germs do not normally belong in the vagina. When the forceps are used damage may be done in the way of lacerations and tears of the cervix, vagina and outlet, so far as the woman is concerned, by not allowing nature to gradually open the way and send the child along by slow and natural stages. Next, with reference to the child, I think the effect of the forceps is murderous, perhaps not at first but ultimately. You can not make me believe the strength of a man with the forceps locked on the fetal head, and perhaps a couple of women holding the women in the bed, will not injure the delicate structures of the fetal brain. In my own family, the only one who has manifested any nervousness, and now she is an adult, was the first born, in whom I believe the physicians prematurely applied the forceps and damaged the head. I would not allow the forceps to be used on any of the others and they have no bad symptoms.

Now as to trauma as a cause of epilepsy. That has not been my experience, and for fifteen years, I was connected with a hospital in which traumatisms constituted perhaps four-fifths of the cases. In New York we have thousands of cases of traumatisms, from children falling from the fire-escapes. We have, consequently, many cases of skull injuries, but my experience has not been that trauma in itself is a cause of epilepsy. I have traced quite a number of cases, where it became necessary to trephine and elevate depressed bone; the children had been brought in the ward perhaps unconscious, and I could not find in enough of cases the history pointing to trauma to convince me it was a positive etiologic factor in epilepsy as a general rule.

As to the surgical treatment of epilepsy; I have trephined quite a number, who had come into the hospital for that special purpose. After Professor Horstley's paper, which did great damage from claiming he could do what could not be done, I hoped something might be done for the epileptics and I trephined. In perhaps about a quarter of them I found those gliomatous tumors, the myxomatous substance between the dura mater and pia mater. Not in a single instance was there anything but temporary relief. I believe there is a question whether the relief was from the loss of blood, the opening of the scalp, the anesthesia, the psychic effect of the operation or what. If there is anything we owe to each other it is to be truthful. We can not get the facts unless we get the cases that do badly as well as those that do well, and I have not hesitated to go before my optimistic brethren in New York and ask them to show me one case which showed relief from operation. But if we have evidence of distinct depression of bone, it is very clear what the line of action should be. But otherwise I doubt the expediency of operation. We should not overlook the fact that these operations are not entirely innoxious. I have known more than one patient to lose his life from hemorrhage. When you start a hemorrhage in the brain, which is an extremely vascular organ, you can not stop it readily. You can not apply pressure without pushing a hole through the brain substance.

Dr. J. A. WORK, Elkhart, Ind.—One point came to my mind during the reading of the first paper. The author did not say much about etiology in petit mal in children. It seems to me we ought to determine the primary cause of all this trouble. He said we should look well to the condition of the child's stomach, to the development of the child, to its food, its environments. It seems to me there is where the trouble originates in early infancy or childhood, when we consider that one-half of the deaths that occur are in children under 5 years of age. I say the same of the second paper read. We do not go back far enough in etiology. It has been my fortune to see cases of epilepsy that have orignated traumatically. I would like, if the Section would permit the time, to report one or two of these cases. One case was that of a soldier, on his way from Indianapolis to another point, who fell off a flat car and was not found for two or three days. When found, he was suffering from depression, I think in the right parietal region. The history of the case was that the patient was unconscious for probably twenty-four hours. The later history of the case I had from his own lips. After returning from the army, although a molder by trade, he went into the study of law, about fifteen years after the injury, and he said from the time he recovered consciousness until I was in conversation with him he had not been void of pain in the region where the injury was received, except when he was asleep. I was called one morning early. He had gone to the cooking room to build a fire and was later found on the floor. This was the first attack he had had of epilepsy, some fifteen to twenty years after the injury. He seemed to recover as if he had awakened from a sleep, and wanted to know where he was, how he came there, etc. The attacks became more frequent, and he became more imbecile and died about two years after the first attack. A postmortem was held. Under the dura mater, at the base of the brain, we found a tumor about the size of a turkey's egg, flattened out, which we supposed was the cause of the epilepsy and death.

Another case was that of a soldier injured at Chickamauga by a shell. He lay on the field for some hours, and the surgeons pronounced his case hopeless. He finally recovered and served out his term in the army. But he said a stroke upon his forehead in the injured region, would bring on temporary insensibility. After his return home, while employed as a

laborer, he fell down with epilepsy, and found he could not obtain employment because of his attacks, which occurred every two weeks. I saw him have an attack near my office. I thought he never would never recover from it. In two weeks, after preparatory treatment, I trephined and removed a three-quarter inch disc. No evidence of fracture of the skull was found. The skull was very thick. In two weeks from that time he had a slight attack and that was the last. He died some ten years afterward of another disease. There was a case of cure, to all intents and purposes, by trephining.

Dr. HAROLD N. MOYER, Chicago, Ill.—I can not allow the opportunity to pass without making a remark or two upon the papers with reference to epilepsy. This disease is one of the most interesting in our pathology. I think we are apt to forget this is the morbus sacer, the sacred disease of history. I believe epilepsy is the oldest disease existing. I believe it began when the animals began to have nervous systems. Animals have the disease; cats are notoriously affected with it; horses have it under the name of "blind staggers;" elephants have it without a doubt, and how far down the scale it extends it is impossible to say. It probably existed prior to the stone age, even prior to the time when man made his advent upon this earth. We understand it now no better than they did then. We absolutely know nothing about the pathology or the pathologic anatomy of epilepsy. We know nothing as to its etiology, more than the exciting causes which have been mentioned. Head injuries, the importance of which has been well brought out, I consider furnish many cases of epilepsy. There are doubtless many other causes, but it is well to remember these are merely exciting causes. Many children receive injuries who do not develop epilepsy. Why do those who receive these injuries not have epilepsy? The difficulty is that the underlying etiologic factor in epilepsy is absolutely unknown to us. If we understood that, we would know its pathology. When we come to the question of treatment, the same thing applies; not knowing the pathology and etiology, the treatment must necessarily be vague. But I wish to emphasize the statements made by Dr. Manley. Operations for epilepsy undertaken indiscriminately because the patient is epileptic, should be discouraged. I believe it is almost malpractice to operate in these cases, for you thereby add a very severe trauma. I want to be understood in the proper sense, for it would not be malpractice if the operation is demanded by some injury, depressed bone, etc. But otherwise I have never recommended skull operations except in the form known as Jacksonian epilepsy where the center could be well localized. I believe the literature of the subject justifies very strong statements on this question.

The paper by Dr. Bishop is very interesting. The Doctor was kind enough to give us his diagnostic rules. I confess as I listened to him I thought I would be able now to make a diagnosis of epilepsy in childhood with some precision, but I fear I will not be able to apply the lines he has laid down. But there is one good rule, which I shall substitute for those given by the Doctor, and that is if I have brought to me a young child in which I suspect epilepsy, I shall assume it is epilepsy and treat it as such. If it is not epilepsy, such treatment will do no harm; and if it is epilepsy in its incipiency, then is the time to do good with treatment. If there is any one rule in this disease, it is to begin treatment early. After the condition is confirmed, treatment is almost entirely hopeless. The petit mal is then more hopeless than the grand mal, because the petit mal is accompanied by changes in the brain which lead to early dementia and conditions leading to imbecility. Unfortunately, the treatment is not all that could be wished. I desire to emphasize the Doctor's remark, that the hygienic treatment is of the greatest importance. As to the medicinal treatment, I am a firm believer in the bromid of sodium and use no other salt. I do not mean to say that you should simply pour in this remedy and you will secure good results, for one-third will not tolerate it, another third will be benefited, and another third will be indifferent to the treatment. But I believe this bromid is better than any of the others, and it is much better borne than the bromid of potassium. If it is given two hours after meals and well diluted, and the patient is frequently bathed, very considerable doses can be given without producing bromism. The bromid of sodium given within the tolerance of the patient and begun early I believe is the most efficient treatment.

OPTIC NERVE ATROPHY FROM TOXIC AGENTS.

Read in Discussion on Optic Nerve Atrophy in the Section on Ophthalmology, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5–8, 1896.

BY G. E. DE SCHWEINITZ, A.M., M.D.
PHILADELPHIA.

Toxic optic nerve atrophy naturally includes, 1, those cases of atrophy which result from a direct action of the poisonous substance, or its systemic results, upon the nerve cells, the nerve fibers or their vascular supply, and, 2, those cases of atrophy which are secondary to retino-choroidal or constitutional changes, which in their turn have been called into existence by toxic agents.

The first class is separable into three subdivisions, namely, *a*, partial atrophy of the optic nerve with special reference to degeneration of its papillo-macular bundle, *b*, scotomatous atrophy of the optic nerve, which is progressive and may become total, and *c*, general atrophy of the optic nerve.

1. Toxic atrophy of the papillo-macular bundle of the optic nerve preceded by inflammation or degenerative changes in this tract and associated with scotoma.—Cases of this class manifest themselves either in the form of a chronic retro-bulbar neuritis, or else as an intoxication-amblyopia, because we may with propriety draw a clinical distinction between these two manifestions, although anatomico-pathologically they are in close accord, the intoxication-amblyopia, as Groenouw puts it, being a special form of retro-bulbar neuritis.

Axial neuritis, a term sometimes employed, according to the same author, should be reserved for those cases characterized by a lesion, confined to the papillo-macular bundle where it is axial in its course.

Following Groenouw[1], the papillo-macular bundle may be described as consisting of those fibers in the optic nerve which supply the retina between the macula lutea and the papilla, and which lie in the temporal portion of the nerve tip, in a wedge-shaped segment. The apex of this triangular portion is directed toward the vessels and occupies about one-third of the surface of the papilla. As it pursues its way through the orbital portion, it gradually approaches the axis of the nerve, which it reaches in the optic canal. At the foot of the chiasm it occupies its upper and inner portion, but in the tractus it sinks to the central portion and remains there until it arrives at the brain.

According to Sachs[2], the papillo-macular bundle in the papilla is a triangle with its apex at the vessels and the base toward the supero-temporal quadrant. Going backward, the bundle becomes elongated and assumes a crescentic form as it nears the optic canal.

It would not be profitable at present to discuss the

[1] Graefe's Archiv, 1892, xxxviii, Abth. I, pp. 1-70.
[2] Archives of Ophthalmology, 1889, xviii, No. 2, pp. 133-162.

differences of opinion as to the disposition of these fibers in the optic nerve trunk, in the region of the vessel-entrance, and their division in the chiasm. For their full consideration the reader is referred to the examinations of Samelsohn,[3] Vossius,[4] Nettleship and Edmunds,[5] Uhthoff,[6] Bunge,[7] Sachs[8] and Stöltzing.[9]

Upon this papillo-macular tract the baleful influence of certain toxic agents falls, and there result an augmentation of nuclei, a hypertrophy of the connective tissue and a wasting of the nerve fibers, the process being most intense, according to Sachs, in one small area, which he calls the "nuclear group." There is, in fact, an interstitial sclerosing inflammation comparable, according to Samelsohn, to the same pathologic process visible in interstitial hepatitis.[10]

Some difference of opinion exists as to the exact nature of the nerve changes. By certain observers the inflammatory nature of the process has been emphasized; by others (Sachs) its degenerative character. To quote from Sachs, the diseased process starts in the interstitial connective tissue and the nerve fibers suffer secondarily from pressure, in the same manner as the hepatic cells are destroyed in cirrhosis of the liver. The vascular changes of the two affections are also analogous, and, according to Sachs, there may be found "not only a proliferating endophlebitis, leading to connective tissue obstruction of the vascular lumen, but a peri-phlebitis, resulting first in a choking of the peripheral capillaries and afterward in small extravasations from them."

The pathologic lesions thus briefly described are based upon the results of about sixteen autopsies. The most important of these are as follows:

1. Samelsohn:[11] The patient suffered from double retro-bulbar neuritis, which began with the clinical picture of an intoxication-amblyopia, the central scotoma being at first relative and later absolute; death resulted from chronic heart disease. The abuse of tobacco and alcohol was not substantiated.

2. Nettleship and Edmunds:[11] The patient was a diabetic and an excessive smoker. The fields of vision were normal and in each there was a nearly central scotoma for red. Death resulted from carbuncle.

3. Vossius:[11] The patient suffered from alcohol-amblyopia, had at one time a central scotoma, and died hemiplegic and aphasic.

4. Bunge:[11] The patient was a tabetic and also probably under the influence of tobacco and alcohol.

5. Uhthoff:[11] (Six cases.) The first patient was a chronic alcoholic, with marked blanching of the temporal halves of the papilla, but without record of scotoma, who died from the effects of alcoholism. The second was a patient with atrophic discoloration of the temporal halves of the papillæ, absolute central scotoma, who died in an attack of delirium tremens from intercurrent pneumonia. The third was a patient with atrophy of the temporal halves of the papillæ, who suffered from delirium tremens succeeded by dementia paranoica and died a lunatic. It was not possible to test the visual fields. The fourth was a chronic alcoholic who died of meningitis during an attack of delirium tremens. No visual fields were obtained, but the temporal halves of the papillæ were atrophic. The fifth was a confirmed drunkard, with atrophic papillæ but without demonstrable color scotoma, who died phthisical, and who suffered also from interstitial hepatitis. The sixth was a drunkard with atrophic temporal halves of the papillæ without defect in the color fields, who died of pulmonary edema supervening on general paralysis of the insane.

6. Wildbrand:[12] The patient suffered from polyarthritis and central scotoma which developed suddenly; death resulted from cardiac failure.

7. Theodore Sachs:[13] The patient was an alcohol-tobacco amblyopic, who had typical central scotomata and who died from intercurrent pneumonia during nephritis.

8. Stöltzing:[14] The patient was a tobacco-alcohol amblyopic, who died from pleurisy, fatty heart and atheroma of the aorta; scotomata are not mentioned or described.

9. Theodore Sachs:[13] The patient was believed to suffer from intoxication-amblyopia, although the abuse of alcohol and tobacco was denied. He had typical scotomata for all colors on both sides; death from pulmonary tuberculosis.

Eight of these fourteen patients had demonstrable central amblyopia and central scotomas. Of the remaining six, in one, although the case is described as an intoxication-amblyopia, the scotoma is not mentioned, and in others either it was not present or the patient's general condition was such that it was not possible to demonstrate it. In all of these, however, the ophthalmoscopic appearances were those usually found with central scotoma.

Alcohol was probably the cause of the optic nerve lesion in seven, alcohol and tobacco combined in two, diabetes and tobacco combined in one, tabes dorsalis associated with the abuse of tobacco and alcohol in one; tobacco was the probable cause in one, although its abuse was denied and the patient died of tuberculosis; in another, although the influence of tobacco and alcohol could not be proved, the clinical symptoms indicated intoxication-amblyopia, and in one the central scotoma existed without such influence. Even in those cases in which alcohol seemed to be the most potent agent, the effect of tobacco could not be entirely excluded. Finally, it will be noted that all of the patients suffered from various types of widespread disease. Therefore we are not actually in possession of the results of an autopsy on a perfectly pure case of intoxication-amblyopia. My endeavors to establish toxic amaurosis in monkeys and dogs were failures, probably because the drug was not continued for a sufficiently long time.

When, however, a definite set of clinical symptoms are taken into consideration, with the results of autopsies thus far recorded, we have reason to believe that

[3] Graefe's Archiv, 1882, xxviii, Abth. I, pp. 1-110
[4] Graefe's Archiv, 1882, xxviii, Abth. III, p. 201.
[5] Trans. of Ophth. Soc. of the U. K. 1881, I, p. 124.
[6] Graefe's Archiv, 1886, xxxii, Abth. IV, 95-108, and Ibid, xxxiii, Abth. I, pp. 257-318.
[7] Ueber die Gesichtsfeld und Faserverlauf im optischen Leistung's Apparat, Halle, 1884.
[8] Archives of Ophthalmology, 1889, xviii, No. 2, pp. 133-162, and Ibid, 1894, xxiii, No. 4, pp. 426-444.
[9] Klinische und Anatomische Beiträge zur Intoxikations Amblyopie. Inaug. Dissert., Marburg, 1893.
[10] Recently Nuel (British Medical Journal, Sept. 12, 1896, p. 629) insists that central toxic scotoma is not primarily a neuritis of the macular bundle, but a disease of the macula lutea, causing degeneration of its cells, and that the optic nerve changes are secondary to the destruction of the nerve cells of the macula. Some experimental confirmation of this view may be found in the research of Usher and Dean (Ophthalmic Review, July, 1896), who have observed macular fiber degeneration follow experimentally produced retinal lesions. Clinically, we know that atrophy of the tissue of the macula lutea, e.g. in atrophic central retinochoroiditis, will cause ophthalmoscopic quadrant atrophy of the disc. As long ago as 1874, Schoen, and later Baer and Treitel, advocated the retinal origin of central scotoma, believing that it indicated a functional weakness of the center of the retina, due to toxic agents.
[11] Loc. cit.
[12] Bericht über die Versammlung der Ophthalmolog. Gesellschaft, xxii, Heidelberg, 1892, p. 84.
[13] Loc. cit.
[14] Loc. cit.

the pathologic process which determines an intoxication-amblyopia is situated in the optic nerve, and especially in that portion which is known as the papillo-macular bundle.

These *clinical symptoms* are as follows: Diminution of sight, associated with fogginess in center of field of vision, unimproved by glasses; reduced acuity of vision, which varies from counting fingers to 20–30 (according to Groenouw from 5–200 to 20–30); pallor of the temporal half of the disc, or of a quadrant-shaped portion of the papilla; normal peripheral boundaries of the field of vision; symmetrical central color scotomas, especially for red and green, usually oval in shape, stretching from the fixing point to the blind spot, and rarely passing much to the nasal side of the former; defective light-sense (Berry, Abney), but according to R. Wallace Henry, normal light-perceptive power.

Of these symptoms the most important is the *central scotoma*,[15] and did time permit, it would be profitable to study in detail its development, enlargement and retrogression, which, as Groenouw remarks, represent a characteristic picture—a picture, moreover, according to Wildbrand, which is analogous to that produced by retro-bulbar axial neuritis, except that in the latter the defect is absolute.

The average size of this scotoma, according to Sachs's measurements of fifty-three fields is out 18 degrees, in 5 degrees, up 7 degrees, down 6 degrees. My own average measurements are out 18 degrees, in 3 degrees, up 7 degrees, down 6 degrees. It is thus, as we see, an oval with its pointed end toward the blind spot and its blunt end toward the fixing spot, to the nasal side of which it passes only slightly.

This scotoma represents a red-green-blind area, and commonly the extent of green blindness is greater than that of red, which in its turn may be surrounded by an area of imperfect color-sense. The "culmination spot," or "nuclear spot," to use the phraseology of Sachs, of the scotoma "lies horizontally from 1 degree to 8 degrees in a lateral direction from the fixation point, its breadth, vertically, being mostly below the horizontal line." Sometimes, however, as we know from Groenouw's observations, the beginning is a small, easily overlooked scotoma exactly over the fixing point.

When the typical egg-shaped scotoma is developed which, according to Groenouw, results from the union of the scotoma from the fixing spot with a supplemental scotoma around the blind spot, the process may cease, or there may be a stage of progression, characterized by an increase in the size of the color defect, usually above, until it meets the limit of the red field, *i. e.*, the scotoma has "broken through." If this goes on the patient may eventually resemble a congenitally color-blind person. In severe cases scotomas for blue and yellow form in similar manner to the red-green scotomas, especially, according to Baas,[16] in the period of "breaking through." Finally, small absolute defects may be found, particularly at the "nuclear spot," but also elsewhere, and in neglected cases, or in those not typically toxic, the scotoma becomes absolute.

Instead of the typical egg-shaped or oval scotoma, the visual defect may pass up and out or down and out. Occasionally a circular scotoma surrounding the fixing point has been described, for example, by Nettleship, Nelson and by myself.

In cases supposed to be more purely alcoholic in origin, either in addition to the relative scotoma for red and green, or instead of it there may be, according to Uhthoff, complete or partial peripheral defects for these colors. In rare instances a small central scotoma for blue appears, and exceptionally there are absolute scotomata surrounded by a blue-blind zone and more peripherally by a red-green-blind region, the periphery for white being normal. According to R. Wallace Henry,[17] if the visual field is full, nicotin is the determining cause of the amblyopia; if spirally contracted (a "retinal exhaustion" field), alcohol is the determining factor. A differential diagnosis between alcohol and tobacco cases, based upon the "pericentral" or "paracentral" position of the scotoma, as originally suggested by Hirschberg, has been shown to be inaccurate.

The various drugs and toxic substances which may be responsible for the clinical symptoms which have just been detailed are tobacco, alcohol, either singly or combined, stramonium, cannabis indica, chloroform, opium, cocain (?), bisulphid of carbon, nitrobenzol, arsenic, lead, iodoform, the toxin of diabetes and probably, according to Baas, ioduret and thiuret, two modern antiseptic preparations.

Clinically, at least, tobacco is *facile princeps* of these deleterious agents, although its effect on the system is usually combined with that of alcohol, the relation of alcohol being not only that of an additional poison, but also that of a substance which predisposes the system to the influence of tobacco by depressing nutrition and creating chronic gastritis, because there seems little doubt that the influence of the tobacco is much more potent if the patient is the subject of chronic gastric catarrh. Indeed, Horner at one time believed that this was the sole influence of tobacco. It did not, according to this author, produce the amblyopia, but it created the nutritive disturbances which in their turn were responsible for the visual defects.

Sachs seeks to explain the action of tobacco in relation to toxic amblyopia in the presence of stomachic catarrh by assuming "that certain complex chemic combinations occur chiefly in the stomach and probably result from the transformation of the normal gastric juices into acids of the fatty type, whose compounds with nicotin are either more readily absorbed, or are with greater difficulty eliminated from the system than the simple tobacco bases." There is no doubt that nicotin is neither alone nor chiefly responsible for the deleterious effects of tobacco upon the visual apparatus, or, indeed, upon the nervous centers generally. It is not unlikely that the nicotin of tobacco smoke is almost completely, if not entirely, decomposed during the combustion of the tobacco, and we must probably look to other compounds, pyridin, collodin, carbonic acid, etc., for influences which have usually been solely attributed to nicotin.

The action of alcohol on the optic nerve is no doubt analogous to its influence on nervous tissue generally and on individual organs, for example, the liver and the kidneys; indeed, we have seen that the pathologic processes are similar.

In the absence of microscopic investigations we assume by clinical symptoms that the other drugs in

[15] Sachs objects to the designation "paracentral," or "central," as conveying a false impression and contends, with justice, for the term "papillo macular scotoma."

[16] Das Gesichtfeld; Stuttgart, 1896, p 164.

[17] Ophthalmic Review, xv, No. 172, 1896.

this list produce a papillo-macular scotoma in like manner. Four of them, lead, arsenic, nitro-benzol and bisulphid of carbon, find their chief subjects among workmen who are engaged in handling these substances. Three of them, cannabis indica, chloroform and opium, to which list perhaps stramonium, arsenic and probably cocain should be added, are potent among drug-drunkards. Three of them manifest their deleterious influences chiefly after absorption through the skin, namely, iodoform, ioduret and thiuret, although iodoform may enter the system by stomachic absorption.

With the exception of cannabis indica, stramonium, opium, cocain (?), iodoform and perhaps some of the cases of bisulphid of carbon and nitro-benzol poisoning, the clinical symptoms of the visual defects of this list of substances are more analogous to those of an axial neuritis than of pure intoxication-amblyopia. This is notably the case with lead.

The prognosis of toxic amblyopia is favorable when only a color scotoma exists and recovery is probable as Groenouw points out, even when small absolute defects are present. In the earlier stages, especially of the tobacco cases, the indications are rather of vascular disturbance than of true neuritis, or perhaps, as Sachs points out, the alterations do not at first affect the nerve fibers, but merely the areolar septa. The nervous tissue is temporarily injured, and cure is therefore possible. When optic nerve atrophy ensues, we may assume a real retro-bulbar neuritis. Nevertheless there appears to be a type of optic nerve atrophy in which, as Lawford[18] has said, although tobacco may not be the sole cause, it has some share in originating or aggravating the changes in the optic nerve; or again, as Browne[19] has suggested, "there are cases of retro-bulbar neuritis which begin with the ordinary clinical symptoms of intoxication-amblyopia, but which do not tend to recovery, the progression of the central defect indicating that atrophy of the papillo-macular bundle takes place." What is the rôle played by tobacco and the other agents thus far mentioned in these cases has not been positively determined. No doubt recovery or progression of the visual defect is largely determined by the length of time during which the poisonous substance has maintained its influence, as well as by the type of the lesion which it produces, as we shall see in the subsequent sections.

2. *Progressive and scotomatous atrophy of the optic nerve the result of toxic agents.*—The class of cases included under this heading, and it is not a large one, comprises those in which the symptoms are an absolute central scotoma of the type seen in retro-bulbar neuritis, that is one not typically oval and lying between the fixing spot and the blind spot; a scotoma, moreover, which increases and tends to "break through," joining the outer limits of the form field, which, at first normal, progressively contracts *pari passu* with the enlargement of the central visual defect.

It will be remembered that cases of this character have been dominated "scotomatous optic nerve atrophy," and are said to occur in young men between the 20th and 25th years, often without discoverable cause and with some hereditary tendency. They are similar to the cases which Edgar A. Browne[20] thus describes: "The affection begins in the central tract, but gradually spreads until the whole nerve is more or less involved and atrophy results. Here a distinct personal proclivity is shown in young persons, members of the same family. Whether there is any ascertainable difference between those cases in which tobacco is the exciting cause and those which occur spontaneously requires investigation." They are probably analogous to the progressive scotomatous atrophy which Jensen[21] has described and which has been regarded by him and by others as a particular form of the development of tabetic atrophy. As has been said before, the relation of toxic substances to this form of optic nerve atrophy is uncertain, but a few cases seem to indicate that they may be at least exciting causes. Of those agents already mentioned, tobacco and alcohol are probably preëminent, lead less certainly. Of the others I am unprepared to speak.

3. *General atrophy of the optic nerve the result of toxic agents.*—General atrophy of the optic nerve as the result of toxic agents may be divided thus:

1. Those cases in which there is a preceding retro-bulbar neuritis or neuritis papillo-macularis, with central scotoma, and in which the diseased process has spread from the papillo-macular bundle and the axis of the optic nerve until it has involved the peripheral and intermediary fibers. To these cases I have already referred in the two preceding sections, and have pointed out that they probably may be due to tobacco and more certainly to alcohol and lead. To this class I may add bisulphid of carbon and probably arsenic.

2. Those cases in which there is a preëxisting intra-ocular optic neuritis, usually of moderate degree, which is succeeded by an ordinary atrophy, that is, a post-papillitic atrophy. Scotomata are not present in these cases.

The most prominent drugs responsible for this state of affairs are bisulphid of carbon (probably), mercury, iodoform (one case only), and especially lead. Exceptionally subjects of chronic alcoholism exhibit optic neuritis. The same is true of patients who are subjects of the chloral habit. Of all the drugs mentioned the most potent in this relation is lead. For example, in sixty-four cases which I have analyzed there were thirteen with optic neuritis, four with neuro-retinitis and seventeen with optic nerve atrophy, while in seventeen cases the patients were stated to be blind without description of the ophthalmoscopic appearance, and no doubt in many of these atrophy or neuritis was present.[22]

3. Those cases in which there is primary atrophy of the optic nerve, that is, an atrophy due to a primary effect of the poison on the visual apparatus without history or signs of preëxisting intra-ocular or retro-ocular neuritis. It is confessedly difficult to maintain this class with exactness, because while the patient may present himself for treatment with complete optic nerve atrophy, there may have been at an earlier stage of his disease an axial neuritis with scotoma or even a general neuritis, neither of which has left signs of its presence.

Of the various drugs which have been named no doubt it would be proper to include in this list those already recited in connection with the previous classification, and we may with reasonable accuracy state

[18] Trans. Ophth. Soc. of the U. K., 1890, x, p. 166.
[19] Trans. Ophth. Soc. of the U. K., 1888, viii, p. 235.
[20] Loc. cit.
[21] Abstract in Ophthalmic Review, x, No. 3, p. 13.
[22] De Schweinitz: The Toxic Amblyopias; Their Classification, Symptoms, Pathology and Treatment. Philadelphia, 1896, p. 157.

that this visual defect is possible under the influence of chronic mercury, chronic arsenic and especially chronic lead poisoning. Referring to the latter I may say that there is certainly an optic nerve atrophy due to the primary effect to lead on the visual apparatus, an atrophy which has been believed by some observers, for example, Parisotti,[23] to be due to changes which lead causes in the nutrient arteries of the optic nerve, changes which we know it may cause in the general retinal circulation.

It is probable also that atrophy may occur under the influence of nitrate of silver, in a manner analogous to lead and bromid of potassium. It certainly results from the toxic influence of filix mas, although thus far reports of this condition are largely confined to Japanese literature. A few cases, however, have appeared in French and German reports, and recently filix mas atrophy has been attributed to filicic acid, Van Aubel[24] believing that this agent acts upon the central nervous system, the spinal cord and the sympathetic, causing dilatation of the pupil and through the vaso-motor nerves contraction of the retinal arteries. It is interesting to observe that the blindness comes on acutely, generally after the ingestion of the drug for the purpose of driving out intestinal parasites. and that within a few weeks or even shorter time, the arteries shrink and the discs become pallid and atrophic.

In this particular the drug may be classed with two others that are able to produce what I may call an acute *optic-nerve atrophy*, namely, quinin and salicylic acid, or to speak more accurately, various preparations of the cinchona bark, and the salicylates. The last named drugs, namely, quinin and salicylic acid, produce symptoms so exactly alike that they may be classed together, although the effect of quinin is much more potent than that of salicylic acid.

The symptoms are as follows: Blindness, complete or incomplete, usually developed with great suddenness and more absolute than in any other recoverable condition (Mellinger and Browne); dilatation of the pupils, absence of the light reflex, imperfect response to accommodative effort, nystagmus, proptosis, occasionally divergent strabismus and increased intraocular tension (Tiffany); anesthesia of the conjunctiva and cornea (Voorhies); extreme pallor of the optic discs and diminution of the retinal vessels simulating the appearances of progressive atrophy; occasionally retinal haze and the cherry-colored spot in the macula, resembling embolism of the central artery of the retina; gradually partial or complete restoration of the central vision, associated at first with complete or partial color blindness; later slow renewal of the color-sense, which may ultimately return; more often permanent diminution of the light-sense and color-sense and contraction of the field of vision, the contraction usually assuming an elliptical shape; very exceptionally permanent blindness (Claiborne).

As we know from the experiments of H. Brunner[25] and myself,[26] as well as from those of a recent Italian observer, De Bono,[27] the exact picture of quinin blindness may be repeated in animals, so that there is do doubt as to a selective influence of this drug upon the visual apparatus—an influence, as I have shown in dogs, which extends from the intraocular end of the optic nerve throughout the visual tract as far as this can be traced in the brain. But, even now, the mechanism of the blindness is somewhat uncertain. Probably it depends upon an influence of the drug on the peripheral circulation of the visual apparatus, which produces at first a pure ischemia, later an endo-vasculitis, and still later, as I have further shown, thrombosis in the vessels and extensive secondary degenerative changes in the optic nerve fibers.

Parisotti's idea of the mechanism of primary lead atrophy, to which I have already referred, is similar, namely, that it depends upon changes in the nutrient arteries of the optic nerve. Indeed, the analogy does not cease here, because referring to Sachs's observations on intoxication-amblyopia pure and simple, we remember that he suggests, and in fact demonstrates, that vascular changes in the diseased tissues of tobacco-alcohol atrophy, producing proliferating endo-phlebitis and leading to connective tissue obstruction of their vascular lumen, are important factors in the anatomico-pathologic basis of this affection.

4. Atrophy of the optic nerve secondary to retinal and other lesions, in their turn the result of toxic agents.—Thus far we have discussed the visual defects caused by an action of toxic substances falling primarily upon the papillo-macular bundle and ceasing at this point, or spreading and involving other tracts in the nerve, or by an action on the entire optic nerve, preceded or not by an intraocular optic neuritis. In a certain number of instances atrophy of the optic nerve is secondary to lesions either in the retina itself, or elsewhere in the body. The cases may be divided into:

1. Those in which the action of the drug has fallen upon the retinal circulation.

Preëminent among substances of this character quinin and salicylic acid should be placed, that is, they should be thus placed if we accept the theories of certain observers in regard to their action, namely, that it is upon the retinal vessels, causing endo-vasculitis and secondary changes. My own observations indicate that they affect the vessels of the optic nerve apparatus especially—perhaps, however, an extension of the original retinal lesion.

2. Those cases in which the toxic agent has produced tissue change, either in the retina or in the retinal vessels.

Preëminent among drugs of this class is phosporus, which early in its toxemia causes retinal hemorrhages and later a fatty degeneration of the retinal tissue itself, which, should the patient live long, would no doubt produce secondary changes in the optic nerve. Probably other poisons, chiefly irritant in their effects, have an analogous action, notably the bichlorid and other soluble preparations of mercury. The influence of acute poisons upon the retina and the secondary changes in the optic nerve require further investigations. If subsequent investigation substantiate the view that toxic scotoma is caused primarily by degeneration in the macula, tobacco and alcohol would find place in this class.

3. Those cases in which the primary action of the poison falls upon some organ or tissue of the body, causing a disease which in its turn is responsible for a retinal and secondary optic nerve change.

The most notable drug of this class is lead, which, as we know, may produce a nephritis, a neuro-retinitis as

[23] Rec. d'Ophth., 1885, 3 s., vii, p. 350.
[24] Annales d'Oculistique, T. 114, 1895, p. 400.
[25] Ueber Chininamaurose. Inaug. Dissert., Zürich., 1882.
[26] Trans. Amer. Ophthalmological Soc., 1891.
[27] Archiv. di Ottal., 1894, ii, pp. 171, 227.

the result of this nephritis, and finally optic nerve atrophy. Lead, in like manner, may produce an encephalitis, or a meningo-encephalitis and secondary optic nerve changes. The effect of alcohol upon the meninges of the brain, causing optic neuritis and secondary atrophy, has already been described. Whether the optic neuritis of chloral, mercury, arsenic and nitrate of silver may have a similar origin, I do not know. It seems probable that iodoform may cause meningo-encephalitis and optic atrophy.

OPTIC NERVE ATROPHY OF OBSCURE SPINAL ORIGIN.

Read in the Section on Ophthalmology, at the Forty-seventh Annual Meeting of the American Medical Association at Atlanta, Ga., May 5-8, 1896.

BY DUNBAR ROY, A.B., M.D.

PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY IN SOUTHERN MEDICAL COLLEGE; OCULIST TO SOUTHERN R.R., HOME FOR THE FRIENDLESS.

ATLANTA, GA.

The important relationship existing between the optic nerve and other portions of the central nervous system, especially the spinal cord, has long been recognized by both neurologist and ophthalmologist. In fact, most clinical observers will readily agree with Gowers,[1] in considering the optic nerve in its development, nothing more than an extension of the central nervous system and anatomically of the same structure as the brain and spinal cord. The pathologic relationship between the diseases of the optic nerve and cerebrum are not so difficult of demonstration, but when we consider this same relationship in diseases of the spinal cord, pathologists must as yet acknowledge their inability to discover any direct anatomic connection.

The portion of the subject allotted to me is not the discussion of diseases in general of the optic nerve, which are dependent upon, or associated with pathologic conditions of the spinal cord, but the consideration of those cases of optic nerve atrophy, only, which bear this relationship to well recognized lesions of the spinal cord. I say "associated with" because no casual dependence has as yet been anatomically demonstrated, but because we observe clinically an atrophy of the optic nerve, and at the same time certain pathologic lesions of the spinal cord we are in the habit of trying to trace some casual relationship. Clinical facts can not always be explained by theoretical reasoning or absolute anatomic demonstration, yet we learn to class them as truths, because of their frequent occurrence under almost identical conditions.

Most writers divide atrophy of the optic nerve into two classes: *a*, primary, *b*, secondary. In primary atrophy disturbance of vision is usually present with the beginning of the atrophic process, both increasing together, while in the secondary form there may be a disturbance of vision long before there are any appearances of degeneration or atrophy in the nerve substance itself; but it is doubtful whether the final appearance of these disks can differentiate the two classes. Primary atrophy occurs most frequently without any discernible cause, yet sometimes is distinctly traceable to heredity. In this form of atrophy previous inflammatory signs never exist.

By secondary atrophy is meant those cases in which the morbid condition may be traced to distinct causes as for instance those following intrabulbar neuritis or choroiditis; ultro-bulbar neuritis, traumatism and direct extension of the process from the cerebrum itself.

Atrophy of the optic nerve occurring in this connection with simultaneous lesions of the spinal cord presents the clearest example of the so-called primary atrophy.

To aid us more clearly in this discussion, I propose to treat the subject under the following three captions:

1. Optic atrophy associated with lesions of the spinal cord and bulb, as:

a. Meningitis.—Optic nerve atrophies resulting from or following an acute inflammation (meningitis) of the meninges or nerve substance proper (myelitis) of the spinal cord and medulla, must be classed as consecutive, instead of primary. Such could only occur as the extension of the inflammation from the spinal cord to like structures in the brain, with a simultaneous involvement of the optic nerve. Cases of this kind are exceedingly rare.

Gowers[2] mentions a case of the optic atrophy following an attack of sporadic cerebro-spinal meningitis. A boy was brought to him, who after a thorough drenching had suffered from severe headache, delirium, fever and stiff neck. Ten days later he became blind. After the blindness, the other symptoms disappeared, and when examined by Gowers there was present only a small degree of light perception in one eye. The papillæ showed the picture of consecutive atrophy, the centers being filled with new connective tissue; the vessels were narrowed, and the choroid in the neighborhood of the papillæ showed marked changes. This author has mentioned two other cases of the optic atrophy following myelitis of the cord which were reported by Clifford-Allbut. In one there was a slight optic neuritis, with indistinct borders of the papillæ, resulting finally in a gray atrophy, and in the second a partial gray atrophy, the cause of which being, probably, a chronic myelitis of the cord of the dorsal region.

A very interesting case has been reported by Dreschfeld.[3] He had under his care a man 24 years old, who with the simultaneous development of double optic neuritis, which led to complete atrophy, developed symptoms of acute myelitis, from which he died in one month. The autopsy showed acute disseminated inflammation in the dorsal and lumbar region of the spinal cord. The brain appeared perfectly normal.

b. Locomotor ataxia.—The association of optic nerve atropy with tabes dorsalis has been recognized as an early symptom of this latter disease for many years. A new impetus was given to the study of this associated pathologic condition by Smeichler,[4] who in 1893, published the result of his studies in a large number of cases found in Professor Alt's clinic at Vienna, and called attention to optic nerve atrophy as an initial symptom of beginning tabes. Such cases of optic nerve atrophy occurring in this connection must be classed as primary, for the ocular symptoms, as a rule, always precede any final manifestation of the disease, and there is never any history or signs of a previous neuritis. In fact, some observers, especially Charcot, have held that all cases of primary optic nerve atrophy are associated with tabes of the cord, and that, although the spinal symptoms may not be present at the time, they will appear at some period during the patient's life.

On the other hand, Uhthoff,[5] with whom Gowers agrees, holds that in only half of such cases is there ever any affection of the spinal cord. According to

Galezwoski[6] about two-thirds of all optic nerve atrophies are tabetic, while Pelteshon[7] found still higher percentage, namely seventy-eight out of ninety-eight cases.

The converse of this question, namely, in what per cent. of cases of tabes is optic nerve atrophy present, is not so easily answered. Gowers[8] remarks that we are very near the truth when we say that out of every six cases of tabes, one will suffer from optic atrophy. Among seventy cases which he observed in succession, of persons suffering from locomotor ataxy, only nine had optic nerve atrophy. Voights[9] among fifty-two cases found atrophy nine times, while Erb[10] among fifty-six cases, found atrophy seven times.

From the study of this subject, it will be seen that nearly all cases of primary atrophy of the optic nerve are associated with tabes of the spinal cord, and that this association with other sclerotic processes in the cord is very insignificant in comparison. That the one is dependent upon the other is not probable, but my own observation leads me to believe, that since the two processes are degenerative in character, it is simply fortuitous as to which part of the nervous system is first attacked.

Gunn[11] has very thoroughly studied these points and very properly raises the question as to the existence of independent changes in both the spinal cord and the optic nerve.

As Gower says, "the pathologic relationship between optic nerve atrophy and individual lesions of the spinal cord is yet dark. The fact that the atrophy can be very far advanced in tabes when the changes in the cord itself are, as yet, in the very first stages . . . makes it probable that the changes in the optic nerve are associated with, rather than a result of the spinal cord lesions."

That there is a close relationship, all must admit, but no postmortems have shown any direct anatomic connection.

Knies[12] says that the process in the optic nerve begins as a disseminated one, and that the atrophy extends in an ascending or descending direction. The middle fibers of the nerve remain longest intact, and we may, therefore, infer an action starting from the periphery. This may take place most readily at the place where the nerve passes through the unyielding optic foramen.

The gray atrophy is also noticeable in the chiasm, tractus, and as far as the primary optic ganglia, but there is no direct connection with the degeneration of the spinal cord.

Pathologic anatomy has not demonstrated the truth of the statement made by Landois and Stirling[13] that "the discovery of the partial origin of the optic nerve from the spinal cord, explains the occurrence of the amblyopia (with partial atrophy of the optic nerve) in disease of the spinal cord and especially in tabes." The only connection between the eye and spinal cord is found in the sympathetic nerves, which come from the cilio-spinal center in the cervical region of the cord, and whose connection with the iris is such that their stimulation will produce a dilation of the pupil. But this connection is anatomically so slight that it would be a matter of impossibility to imagine a process reaching the optic nerve from the spinal cord by means of this route. A most excellent summary of the views at present held were given by Gowers,[14] in opening a discussion upon "Eye Symptoms in Diseases of the Spinal Cord before the Ophthalmological Society of the United Kingdom."

This writer holds that optic nerve atrophy and internal ocular paralysis must be regarded as associations, not an effect of spinal lesions. Because: 1. Diseases of any nature may exist in any part of the spinal cord without occurrence of ocular symptoms, if we except rare paralysis of the dilators of the pupil in disease of the sympathetic tract in the cervical region. 2. The ocular symptoms which may be absent when the cord disease is advanced, may exist in an extreme degree, when such disease is in a very early stage. 3. With the single exception of the sympathetic symptoms just mentioned we know of no anatomic mechanism by which the spinal cord can produce the ocular symptoms.

What is true of tabes is essentially true of other sclerosing processes in the spinal cord. It matters not whether the atrophic or sclerotic process commences first in the optic nerve or spinal cord, this one fact remains clear that the pathologic processes show some similarity in character. These associated ocular symptoms are the results always of degenerative processes, and their presence shows that the cord disease is essentially degenerative in its nature. This is made evident in the slow progressive character of the spinal symptoms.

The researches of Pierret, confirmed in part by Dejerine and anticipated partly by Westphal, have enlarged and altered our conception in regard to tabes dorsalis, which, in some measure, throws a ray of light upon the association of this malady with optic nerve atrophy.

Pierret has shown that degeneration in the optic nerve is not the only peripheral lesion, and that the same in the cord is not the only central change in the disease. Often there is independent degeneration in the cutaneous nerves, commencing in their extremities, to which the optic nerve change is analogous. There may be degeneration at the central termination of the optic as well as other cranial nerves, analogous to that in the posterior columns of the cord. He terms it "wide sensory neurosis."

What has been said applies not only to tabes in particular, but to all morbid conditions of the spinal cord presenting degenerative changes in the nerve structure.

Ocular symptoms, especially optic nerve atrophy, have long been a diagnostic sign in spinal cord lesions, especially tabes. So frequently is this association present that clinicians are in the habit of associating all primary atrophies of the optic nerve with similar degenerative processes of the cord. From what has been said it is evidently improper to speak of optic nerve atrophy of spinal origin, unless we mean its orgin is from the same source, as is the associated lesions in the spinal cord.

The symptoms of optic nerve atrophy associated with tabetic changes in the cord are said to be very characteristic, which is true when they all exist, but there are many cases of atrophy where only two or even one diagnostic sign is present, as, for instance, in those cases of slow development of the ataxic symptoms, and in such cases one can not positively recognize such associated pathologic changes.

The appearance of the disc in the optic atrophy occurring in connection with tabes, is said always to be of a characteristic gray color instead of white, and this discoloration of the disc has been frequently commented upon by various writers. Especially is the color gray, or pearly white by the indirect oph-

thalmoscopic picture, while by the direct it is gray or mottled, presenting sometimes according to Gowers, "a peculiar gelatinous opacity." Yet he who would make a diagnosis solely through the color characteristics of the disc will often err, for I have seen true cases of tabetic atrophy, where the appearances much more resembled the whitish than a grayish tint, and for that reason I fully agree with Dr. Young, who says that there is always a possibility of inaccuracy since expert ophthalmologists may honestly differ in the question of definite color. Furthermore, Gowers has called attention to the fact that gray atrophies occur under other pathologic conditions, as, for instance, in consequence of the post-orbital pressure upon nerves already atrophic from other causes than tabes.

The histo-pathologic changes in this form of tabetic atrophy have been thoroughly studied by Uhthoff, Gowers and Leber. According to the latter author, the microscopic appearances in the nerve show an increase in the interstitial fibers and sometimes a formation of transparent cell bodies around the vessels and at the same time atrophy of the nerve fibers. Another point which is noted in this form of atrophy is the normal caliber of the blood vessels, especially the arteries, which in other forms of white atrophies are usually smaller in size. This, according to Knies, is due to the fact that the original process is located behind the entrance of the central vessels. But, according to my experience, this picture is not universally present; the conscientious ophthalmologist must be prepared for deviations on this point. The disturbance of vision which occurs in connection with tabetic atrophy, for both form and color, is another important symptom. It has been especially noted that the ophthalmoscopic picture is no criterion for estimating this disturbance of sight. Cases are sometimes seen where the disc is atrophic throughout and yet there is but a slight diminution in the vision, while even in the majority of cases atrophy appears before there is any disturbance of this function whatever.

Yet another symptom, perhaps the first, is the contraction of the field of vision for both color and form, this contraction following in this order, green, red and white, until there is a total achromatopsia. The field of vision for both form and color is a concentrically narrowing one, progressing gradually until there is a very narrowed, central circle remaining, corresponding perhaps to merely the point of fixation and this gradual narrowing may continue for years before there is total loss of vision, and before the patient is aware of the diminution of sight. This loss of vision is very gradual and slow, and such cases as the one reported by Hirschberg,[15] where vision was almost entirely lost in eight weeks, are extremely rare. Knies[16] says that, prognostically, the color disorder is important, because those cases in which the color boundaries are very much narrower than those for white belong to the rapidly progressive cases.

A central scotoma in this form of spinal atrophy is extremely rare and when it does occur should, according to certain writers,[17] excite a suspicion of other spinal lesion than tabes. The "Argyll-Robertson pupil," or one which responds to accommodation but not to light, has to me proven of more value in substantiating the correct diagnosis of this disease than all others, and this symptom will exist even in the very latest stages.

Many writers say that a contraction of the pupil is an early symptom of tabetic atrophy, calling it a "spinal myosis," but my observation leads me to consider this sign as exceedingly transitory, finding, as a rule, mydriasis rather than the opposite. A much more constant symptom is the inequality in size between the two pupils and which is far more pathognomonic than a myotic condition. One question in connection with this subject is whether a primary gray atrophy will always be followed later by the ataxic symptoms of tabes, as is held by some writers. This is a question most difficult to answer, because of the time which may elapse between the appearance of the optic atrophy and the tabetic symptoms. In the majority of cases it is a matter of great difficulty to keep patients under close observation for long periods of time, hence it is that a statistic report is difficult to obtain.

Kahler has reported a case where atrophy existed seven years; Charcot, a case where it existed ten years, and Gowers one of fifteen and twenty years before there was any marked tabetic symptoms. I deem it unnecessary to report here the histories of cases of this affection, because cases of optic nerve atrophy in association with tabes dorsalis are by no means infrequent, and none of those which have come under my observation presented any symptoms which are not common to all such cases. The prognosis in such cases of optic nerve atrophy is bad and we have yet to find the remedy which will benefit them.

c. Multiple sclerosis.—In this affection it is a matter of impossibility to consider the pathologic process as confined exclusively to the spinal cord, for it is well known that the sclerotic process is liable at the same time to involve any portion of the cerebro-spinal system, and rarely is there a limitation to one particular part. Hence, when optic nerve atrophy does occur simultaneously with insular sclerosis in the spinal cord the same sclerotic process will be found also in the brain substance. My colleagues will no doubt call your attention to this point when discussing the brain lesions, for with the majority of writers multiple sclerosis is more frequently spoken of as brain than as spinal lesion.

The observations of Buzzard[18] do not agree with the majority of writers, when he says that atrophy of the optic nerve is most frequently associated with insular or disseminated sclerosis, next frequently in connection with fasciculated sclerosis of the posterior columns (in tabes and general paralysis of the insane), and least often with fasciculated sclerosis of the lateral columns.

According to Knies, pronounced atrophy of the optic nerve in this affection is rare, about 3 per cent., incomplete or partial atrophy about 19 per cent.

Gowers says that atrophy occurring in this connection is very similar to that occurring with tabes, and until the ataxic symptoms appear the diagnosis is somewhat difficult. In pure insular sclerosis of the spinal cord he has never seen optic nerve atrophy occur but three times.

d. Lateral sclerosis.—This pathologic condition constitutes the last of the chronic sclerotic conditions of the spinal cord with which atrophy of the optic nerve is sometimes found associated and likewise the most infrequent.

Gowers has never seen this associated symptom but twice in all his vast experience. Such would naturally be expected, since many cases diagnosed as

lateral sclerosis have been found, postmortem, to be due to some other lesions, hence the nervous organic lesion must be accurately diagnosed first before we can associate it with optic nerve atrophy. The same writer above referred to has reported a case of combined sclerosis of the posterior and lateral columns, with gray atrophy of the optic nerve and bilateral oval central scotoma, especially for red and green. This latter symptom is held by some, as before mentioned, to be a differential sign between optic atrophy associated with tabes and other pathologic lesions of the cord.

e. Injuries of the spinal cord.—As we progress still further into the pathologic changes of the cord with which optic nerve atrophy is associated, we are confronted at every turn by a yet wider obscurity in connecting the two lesions.

There was certainly no necessity for the use of the word "obscure" in connection with this subject under discussion to-day, for as soon as one begins to study the literature of the subject and his own personal experience, he is confronted on all sides by nothing but obscurity. There have been a few cases of optic nerve atrophy reported, which occurred at the same time or some time after an injury to the spinal cord, hence it was natural to consider the atrophy somewhat in the light of a *propter hoc*. Ever since Erichsen gave to the medical world, and now the special property of the legal profession, his brochure upon "Spinal Concussion," this subject of spinal injury or "railway spine" has been a fruitful field for a large amount of medico-legal harangue.

Injuries may occur to the spinal cord without any discoverable injury to the vertebral column (concussion), yet when this latter is involved we can much more readily discover the relationship between the seat of injury and the spinal symptoms. In this, as in all pathologic conditions of the cord, if optic nerve atrophy should arise it must be looked upon simply as an accidental association, not in any causal relation, since, as yet, no anatomic connection has been found to exist.

Wharton Jones states that affections of the optic nerve are frequent after injuries of the spinal cord, but fails to add that atrophy as one of these is exceedingly rare. What changes do occur, especially in cases of concussion, are referable to changes produced in the sympathetic system, which presides over the vaso-motor functions of the body.

Fowler[19] has reported the case of a man who was thrown from a caisson during the war and was run over, the wheel passing over the lower portion of the dorsal region. The lower extremities were paralyzed for a few months. His back rendered weak; he perspires freely and his face flushes easily; no suspicion of syphilis. Sight failed gradually from optic atrophy of both eyes and vision was finally lost altogther.

Caries of the vertebral column is but another form of injury when it involves the cord. Abadie[20] has published a supposed case of caries of the vertebral column at the base of the skull, which was accompanied by atrophy of the optic nerve together with a meningitis. So far, I have been unable to discover in literature any trustworthy cases of optic atrophy where such a casual relationship could be found, as injury to the spinal cord.

f. Trophoneuroses.—Under this head medical literature does not afford us many cases of associated optic atrophy, and I have been unable to find but one authentically published case. This was "A Case of Acromegaly, with Atrophy of both Optic Nerves," reported by Dr. George Carvell:[21]

Male, aged 52; carpenter. Father died of old age and debility, while mother died of pulmonary disease. None of patient's relatives had similar conditions to his own.

History: Up to twenty years ago patient had enjoyed good health, and between the ages of 20 and 30 was able to wear No. 8 glove. When about 30 years old he began to grow stout and suffered from general weakness. He still continued to work until his sight began to fail. Five years ago he was unable to read a newspaper, and from that time has become worse. During the last few years has suffered from shooting pains in the arms and legs, especially in hip, knee and ankle joints; complains of coryza. *Present condition*: Is of medium height, corpulent, and clumsy in movements; pallor of face and lips; nose is large; malar bones prominent; occipital tuberosity and lower jaws are unusually developed, the latter protruding in front of upper jaw; internal organs healthy; urine, orange color; specific gravity 1030; urates in great abundance, no sugar or albumin. Eyes: pupils of equal size and react to light and accommodation; right eye vision=6/60; left eye vision=fingers at one meter; no improvement with glasses. Ophthalmoscope=marked optic atrophy in both eyes; discs milky, edges sharp and defined; fields laterally diminished, especially in right eye. Color: Distinguishes blue and green; calls red and yellow buff.

2. Optic nerve atrophy occurring in connection with diseases of the peripheral nerves.—According to Knies, diseases of the peripheral nerves rarely affect the eye unless they belong to that organ, or are adjacent to it. In multiple neuritis an optic neuritis sometimes occurs, but no cases of optic atrophy have been reported where a causal dependence could be found. In the medulla, cases have been reported where there occurred optic atrophy at the same time or following certain affections of the peripheral nerves, which have their nuclear origin from this source. In chronic bulbar paralysis, changes in the optic nerve, while sometimes occurring, are very rare. Galezwoski has observed and reported a case of one-sided optic atrophy which occurred in connection with a chronic progressive paralysis of the bulbar nerves. Robin cites a very interesting case from Von Dianaux, where a rapid atrophy of both optic nerves appeared in a man 76 years old, who was suffering from a deep affliction. It was also accompanied by a paralysis of the sixth nerve. The vision was entirely lost in two months, yet, when he was again seen some time later, the vision had increased even to one-tenth.

A full history of double optic atrophy in connection with bulbar paralysis is reported by Drs. J. W. Barrett and P. S. Webster of Victoria, Australia:

E. C., aged 30. Symptoms began three years ago with drooping of the left lid and turning outward of the eyeball. When first seen six months ago the following conditions were present: Right eye, pupil 6 millimeters; does not react to either light or accommodation; no external ocular paralysis. Vision=5/60. Emmetropic; optic disc very pale from primary atrophy. Left eye, pupil 7 millimeters; no action to light or accommodation; paralysis of internal and inferior rectus; weakness of superior rectus. Vision=fingers at two feet; contraction and loss of color vision; at present fields are much smaller. Right eye vision=5/60; left eye vision=light perception; paresis extended to internal rectus and superior rectus in right eye and has increased in the muscles of the left supplied by the third nerve.

Patient's general health good and he has no other spinal symptoms. At one time he suffered from headaches and has had a little rheumatism. Seventeen years ago had a chancre and was treated two months. No secondary symptoms.

Diagnosis.—Atrophy of optic nerve and independent specific nuclear affection of the nerves implicated.

Through the kindness of Dr. H. V. Würdemann I am enabled to report another very interesting case:

T. G., aged 38; hack driver. Presented himself on account of a nervous trouble in both eyes.

Examination.—Right eye vision=5-12; left eye vision=5-12: total paralysis of third nerves, except the branch going to levator palpebræ sup. The perimeter showed lateral (homonymous) hemianopsia for form and for white, red and blue. There was total achromatopsia for green. By ophthalmoscopic examination the optic discs were white and atrophic, especially the macula fibers. Syptoms of multiple sclerosis were present also in other organs.

Leaving now those pathologic conditions of the spinal cord and medulla, where distinct anatomic changes could be discovered we come to the third division of our subject and that portion enveloped still farther in the domain of obscurity.

3. Optic atrophy associated with functional neuropsychoses such as hysteria, chorea, etc.—It may be questionable whether the discussion of this last division belongs properly to the domain of the spinal cord, but since the symptoms of those diseases classed under the head of "neuropsychoses" manifest themselves most prominently in those portions of the body whose activity are dependent upon their relationship to certain nerve centers in the spinal cord, it seems but proper that the spinal cord should take a more prominent position than any other portion of the cerebro-spinal system.

Most of the functional neuroses are still enveloped in obscurity, and since the etiology of the diseases themselves are still a matter of dispute, it is but natural to suppose that any association of optic nerve atrophy with the same affections should be still further beyond the reach of even theoretic reasoning.

a. Hysteria.—In this disease we all know of its multiform symptoms and of the appearance occasionally of various ocular manifestations. I have been unable to find any authentic case of optic atrophy whereby a relationship of the two diseases could be established, and Gowers says that in one or two cases of hysteria optic atrophy has been observed, but that its presence was probably purely accidental, or there existed at the same time some organic disease, as disseminated cerebro-spinal sclerosis. In fact, in all functional nervous troubles any appearance of optic atrophy can not be regarded as anything but accidental and not causal.

Weir Mitchell,[24] in narrating a case of tabes in a child, calls attention to the fact that in hysteric ataxy, in contradistinction to the congenital forms, both optic discs are gray, the arteries too small, the veins and pupils normal, the red and blue fields typically reversed and fields for form contracted.

Buzzard[18] calls attention to the fact that contracted normal fields should make us hesitate in diagnosing "hysteria," even though there are no appearances of atrophy of the optic nerve, for often in such cases a change in the nerve, which ultimately ends in atrophy, will subsequently show itself.

On the other hand, Leber[25] has found objective changes in the optic nerve in amblyopia with concentric narrowing of the field, which, according to Charcot, is characteristic of hysteria. These changes were found, by postmortem and microscope, to consist in an occasional atrophic process in some bundles of the optic nerve fibers in front of the chiasm, indicating that the process was peripheral, yet, so far, no case has been reported where a complete atrophy of the optic nerve was present. In Leber's case the optic nerve appeared perfectly normal to the naked eye.

b. Chorea.—The pathology of this disease is still a matter of dispute. Various anatomic lesions have been found associated with this disease, but its nature is still a matter of dispute. According to Germain Sée and many others, it has a rheumatic basis, while Joffroy holds it to be in the cerebro-spinal system and is unconnected with rheumatism. The connection between chorea and heart disease has been frequently noted, hence some consider those cases of optic nerve atrophy which are found associated with chorea to be dependent upon emboli of the vessels of the optic nerve.

A few cases of optic nerve atrophy occurring in persons at the same time or previously suffering with chorea have been reported. From one of the assistants in the neurologic department of the Manhattan Eye and Ear Hospital I have ascertained that the percentage of optic atrophies in true cases of chorea is about 1 in 250.

Such cases as have been reported have all been due to an embolus in the central artery of the retina, hence must be traced back to some probable organic disease of the heart. An interesting case is reported by William George Sym.[26]

B. M., boy, aged 17; came to Royal Infirmary complaining of loss of sight in right eye. History: Had perfect vision up to ten years ago; at that age he had an attack of chorea. He made a good recovery from this until one morning, when he felt a sudden mist come over the right eye. At that time he was walking; never received any blow or injury near the eye; nothing unusual in family history; neither parent is rheumatic, but one brother was said to have had articular rheumatism. Examination: Left eye vision=20/20; right eye vision=0; no perception of light; right eye does not converge on fixing a near object; pupil does not contract to light; tension normal. Examination by ophthalmoscope: Right eye presented absolute atrophy of optic nerve, disc being dead white; blood vessels extremely small; no traces of hemorrhage and exudation, and disc, in which cupping of optic atrophy was well marked, was normally regular in outlines; macula normal; choroid coat apparently normal; no staphlyoma. Left eye normal in appearance; evidence of stenosis in mitral valve.

Conclusion: Atrophy of right eye due to embolus plugging arteria centralis retinæ of that side and thus cutting off blood supply to retina, this having occurred during the attack of chorea at the time he felt the mist over his eye.

Atrophy following neuritis almost invariably affects both eyes, though one nerve may be more advanced than the other. Here we have atrophy of one, associated with a normal condition of the other. In children, bilateral simple atrophy is rare and so is neuritis, unless dependent upon some gross brain lesion. Dr. Sym mentions the fact of Gowers having said that there is on record only two cases of embolism of the arteria centralis retinæ occurring in consequence of chorea. However, Argyll-Robertson has mentioned a similar case occurring in a young lady, so that I am confident that there probably exists other cases which have never been reported. In the study of any subject one must be content with such published reports as can be found in the literature, in hopes that by the publication of these and his own personal experience, others may be brought to light which have been resting in obscurity.

In idiopathic epilepsy, where many of the symptoms of this disease show some involvement of the spinal cord, I have been unable to find any reported cases of associated optic nerve atrophy, although other changes, such as hyperemia, anemia, narrowing of the blood vessels, edema, etc., of the optic disc have been noted by various observers. In general paralsis of the insane, which involves the whole cerebro-spinal system, changes in the optic nerve of various kinds have been noted, and among them atrophy. Bullard,[18] in 400 cases of this affection,

found complete blindness only three times. This was due to a gray atrophy of the optic nerve, similar in all respects to that found in tabes, and hence the causative relation bears the marks here as in tabes. In forty-seven cases Jehn[27] found marked atrophy seven times; in three the atrophy was double, while in four it was only on one side. Writers also hold that a slight degree of atrophy with amblyopia is still less frequently observed than complete atrophy.

Galezwoski,[30] in forty-eight cases, has only observed beginning atrophy once, while Boy has observed it four times among eighty cases, which were thoroughly examined.

In this affection, as in tabes, it has been noted that the signs of atrophy may appear some time before the symptoms of general paralysis, and Magnan mentions the fact that he has observed these changes two to four years before the other symptoms appeared.

In conclusion would say that it is entirely unnecessary for us, in considering this subject, to qualify the term "obscure," for with all our advancement in pathologic anatomy we are as yet unable to trace the casual relationship of many cases of optic nerve atrophy, and especially is this true when we recognize that this atrophy is in some mysterious way connected with lesions of the spinal cord.

Experience and the microscope teach us that certain well defined chronic lesions of the spinal cord are more usually associated with atrophic changes in the optic nerve than certain others, but the *raison d'être* is not yet within the confines of our knowledge. Much original investigation can yet be made in trying to extend our knowledge of the subject.

The reports of clinic cases, especially those seemingly of spinal origin or relationship, will add much to a more thorough comprehension of the subject, and especially with minute postmortem examinations will be of much substantial value.

REFERENCES.

1 Gowers: The Ophthalmoscope in Internal Medicine, German edition, p. 123.
2 Gowers: Ibid, p. 195
3 Gowers: Ibid. p. 208.
4 H. B. Young, M.D: Paper before Iowa State Society, 1895.
5 Arch. of Ophthal., Vol. xxvi, p. 277.
6 Knies: The Eye in General Diseases, p. 187.
7 Ibid.
8 Gowers, p. 209.
9 Berlin: Klin. Woch., 1881, No. 39.
10 Deutsch: Arch. of Klin. Med., 1889.
11 Gunn:
12 The Eye in General Disease, p. 188.
13 Landois and Stirling Physiology, p. 608.
14 Gowers: Trans. of Ophth. Society United Kingdom, Vol. iii, 1883.
15 Gowers, p. 186.
16 Klin. Beobach, 1874.
17 Knies, Gowers.
18 British Medical Journal, October, 1893.
19 Journal of Ophth., January, 1891.
20 Gowers, p. 216.
21 Trans. Ophth. Society United Kingdom, Vol xi.
22 Jahrof, August, 1881, p. 315
23 Australian Medical Journal, 1894, p. 226.
24 Medical News, July, 7, 1894.
25 Knies, p. 217.
26 Edinburgh Med. Journal, 1888, p. 811.
27 Ann. Med. Psychologiensis, 1863.
28 Gowers: The Ophth. in Internal Med.
29 L'Union Med., Vol. xxi, p. 102.
30 These de Paris, 1879.

Loretin versus Iodoform. The comparative results in the treatment of suppurating surfaces are stated by Dr. W. O. Green as follows: 1. Loretin is without odor. 2. It is slightly more stimulating, and causes more pain perhaps when first applied, but is shortly followed by more permanent analgesic effect. 3. It has greater antiseptic properties, and on this account, limits and then diminishes more rapidly the local inflammatory condition. 4. The process of granulation is more rapid and more perfect. 5. The local alterative effect is greater, and therefore the part requires less supplementary treatment in the way of local applications. 6. The discharge diminishes more rapidly.—*Am. Therapist*, September.

THE ETIOLOGY AND PROPHYLAXIS OF FUNCTIONAL NERVOUS DISEASES.

Read in the Section on Neurology and Medical Jurisprudence, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY JOHN PUNTON, M.D.

Professor of Nervous and Mental Diseases University Medical College and Woman's Medical College; Neurologist to All Saints, Kansas City, Fort Scott and Memphis, and Missouri Pacific R. R. Hospitals, etc.

KANSAS CITY, MO.

In taking a retrospective view of the principal features which characterize the age in which we live, it seems to me none are more conspicuous and striking than the rapid advance of medical science. In the many hundred years of its existence no such triumphs are recorded and no such brilliant results achieved as those which belong to the present generation.

The principal results of such advance afford us the means of rendering finer discriminations in classification and diagnosis of diseased conditions, and consequent enlargement of medical nomenclature, all of which tend to increase the great mass of specific knowledge relevant to each department. In no branch of medicine, perhaps, are the effects of such marvelous changes more visible and potent than those which pertain to the science of neurology.

The vast increase of our knowledge of the anatomy and physiology of the nervous system and the application of this to disease has been found to be most useful in the correction of former erroneous inferences. Hence a complete revolution has taken place in our knowledge of its pathology, which has also been the means of greatly enlarging the range of its organic diseases, at the same time gradually limiting the power and significance of the so-called functional affections.

We find that in connection with the study of the histology of the nervous system many other factors were necessarily implicated. Among the most important of these was the study of their *etiology* and *prevention*, two of the mightiest forces connected with diseases incident to the progress of modern civilization. To trace the intricate change of both structure and function, as well as all the problems connected with the prevention of such obscure neurotic affections is a task which so far has baffled the skill of the brightest intellects of our profession. Nevertheless much has been done in not only discovering the cause, but also preventing their occurence by overcoming many of the agencies which contribute toward their production.

Nervous diseases are increasing and multiplying at a marvelous rate, and there are physiologists who assert that both the European and American races are deteriorating as their civilization becomes crystallized. This is accounted for by the increased demands of modern civilization. Recognizing the extreme importance of the subject it is right that we devote special attention to its consideration.

It would be impossible for me to refer to the many causes, or the theories which have been offered from time to time, to account for the presence of the varied phenomena associated with the more obscure neurotic affections designated as functional. From time immemorial these numerous factors have been recognized to consist of two classes, viz.: Predisposing, and exciting. In the former are included all the conditions pertaining to hereditary neuropathic taints, while the latter embraces all agents which tend to unduly excite the already predisposed, or become the means of creating certain morbid neurotic phenomena.

One of the most important facts, which has been clearly demonstrated of late, proves that the entire nervous system in the normal infant and child is constantly undergoing marked changes in both structure and function, and that the former is much more rapid in its development than the latter, and that these are largely influenced by the conditions of heredity and environment, both in retarding as well as developing their normal conditions. There is a marked disproportion between motor and sensory cell activity in the child and this can be easily explained on physiologic grounds, but it nevertheless renders the child more vulnerable to certain neuroses, such as convulsions, epilepsy and headache.

The highest function of nerve cells is the power of inhibition, and this endowment is the last to be developed in the process of physiologic evolution. Cells are capable of generating or storing up nerve energy, beside the power of distributing it. For this purpose the cell calls to its aid the various nerve fibers, both afferent and efferent, and their peripheral end organs; hence the whole nervous system becomes subservient to the cell.

It is very plain to see that if the generating or discharging functions are not subject to proper control by virtue of their feeble inhibition that nervous instability results, which is highly characteristic of the neurotic diathesis and hence plays a very important rôle in the production of nervous diseases. When this abnormal lack of proper nervous adjustment or balance is again augmented by an already existing neurotic predisposition the individual is rendered even more vulnerable to trivial influences.

The cell in its normal state has been shown, microscopically, to present certain definite characteristics, which when subject to its normal daily activity gradually undergoes definite changes, both in its chemic and morphologic constitution. These changes when the normal stimuli are unduly prolonged are even more pronounced. The normal results of all cell activity is marked fatigue, but if the activity is unduly prolonged the cell becomes exhausted. In the former case the cell still retains the power of its normal reaction during a period of rest, viz., twenty-four hours for every five hours of normal activity (See Rachford on Neuroses of Childhood, p. 98) and becomes regenerated, while in the latter case the cell often becomes unable to further respond and is literally in a state of inanition. Hence it becomes possible to clinically recognize three classes of cells, viz.: 1, those which are normal or in a state of rest; 2, those which are more or less fatigued after their normal activity; 3, those which are thoroughly exhausted by over activity.

In diseases of the nervous system none of us will have much trouble clinically to recognize conditions representing these changes, for it has been shown by Hodge that the cells suffering from fatigue have a close kinship to neurasthenia, and it is only plausible to conclude that in functional diseases we may at first have similar cellular changes of greater or less degree, which may ultimately give rise to degenerate changes. Excessive mental and physical application would therefore seem to be potent factors in the causation of diseases.

In a recent article by L. H. Mettler on "Work and Worry," (New York *Medical Record*, Sept. 7, 1895) the writer says in summing up: "Work and worry, I therefore take it, are not baneful in themselves, not even when carried to excess, but the monotonous unbroken continuation of the excess is exceedingly injurious."

Professor Erb of Heidelberg (See *Medical Record*, March 16, 1895), in a recent address seemed to regard the feverish activity of the age as a symptom of disease. "The over-work, over-crowding, over-stimulation, increased use of tobacco and alcohol, together with excessive railway travel, with all its nerve-jarring motion," he thinks all tend to produce a loss of nerve tone, which ultimately results in neurasthenia, which is a refined expression of hysteria and hypochondriasis. Commenting on this, the *British Medical Journal* says: "While this may be true, there is another side to the picture, in that there is a greater knowledge of the subject, a greater tendency to freedom of exercise, to the freedom from strict conventionality, to the freedom from ailments that come from healthful surroundings, and that worry, not overwork, is the danger of the age, and this danger arises from decreasing and deferred marriage."

Worry is an exceedingly potent factor in the production of nervous diseases and persons suffer far more from the effects of worry of things that never happen than those which actually occur. We live in constant anticipation of danger, and this brings with it a continued and prolonged mental state of anxiety. The effects of such monotonous routine on the nerve cells is self-evident.

The most conspicuous and important cause and that which underlies all the rest in producing and propagating all forms of nervous disease, is the transmission through successive generations of that peculiar bodily condition known as the "neurotic diathesis." This manifests itself by nervous instability and defective innervation of the organic functions, materially influencing the normal development of the nervous system in the offspring and makes itself felt by a constant tendency to degenerative changes in the nerve elements, rendering the subjects of it peculiarly liable to break down under strain that would not affect persons inheriting a different constitution.

Jonathan Hutchinson says (See "The Pedigree of Disease"): "I would define a diathesis to be any bodily condition, however induced, in virtue of which the individual is through a long period, or usually through the whole life, prone to suffer from some peculiar type of disease." With this definition I fully agree. The same author also says: "Some diatheses are inherited, others are acquired. Of some the effects are permanent or constant, of others they are transitory or recurrent after intervals of health. The term should, however, never be applied to any condition of health which is expected to pass away and leave no trace, for the idea of persistence in some sense is always implied. On the other hand, we do not confuse diathesis with dyscrasia, for whilst the latter definitely implies bad health, the former only denotes proclivity and may be used when its subject seems perfectly well." Hence, we learn that the individual diathesis may present itself in every degree from a slight weakness to a very pronounced morbid tendency.

The term temperament is also liable to be confounded with diathesis in its more simple manifestation, hence the term temperament is used to designate the "sum total of the physical peculiarities of an individual exclusive of all definite tendencies to disease." Thus says Hutchinson: "To distinguish between temperament and diathesis we may say that

the former is a matter of physiology and the latter of pathology."

Inherited diathesis is more often, than not, entirely latent at the time of birth and is susceptible of aggravation, or in some cases of cure in after-life. "Such alternations are not possible in the constitutional peculiarities which we name as temperament."

I have thus dwelt at length on these terms in order to overcome a very common source of useless argument on the part of the profession by failure to comprehend the full significance of certain technic terms.

A certain predisposition or tendency to disease is transmitted from parent to child, and often is the only responsible agent for the presence in the offspring of any one of the various neuroses, such as hysteria, chorea, neuralgia, migraine, epilepsy, together with more serious organic spinal and cerebral diseases, including insanity.

We do not presume to explain all the intricate details concerned in their genesis, or even the pathologic changes occurring in the tissues and cells, as the laws which govern the transmission of hereditary traits are generally unknown, but the number of inheritable deviations of structure and function are endless.

These abnormal conditions of inheritance are often the result of imperfect growth, defective nutrition, incorrect habits, injudicious education and modes of life of the parent, the general effects of which tend to lower the normal standard or health and are marked by having a special injurious influence upon the general development of the nervous system, impairing its functions and exhausting its specific energies. The morbid products resulting from such deterioration are readily transmissible from parent to child and furnish the germs which in the offspring establish the neuropathic constitution. They are the seeds which may or may not remain latent for years, but if subject to the stimulating processes of the educational period, or the excesses incident to society life they rapidly mature and strengthen until they manifest themselves in some serious form of nervous disease.

The same causes which produced the deterioration in the parents are often allowed to have full sway in the child, already predisposed, and then a still greater deterioration is liable to occur. Then again, Rachford (See "Neuroses of Childhood") shows conclusively that bacterial products are also important factors in the causation of nervous diseases by their direct poisonous action on the heat centers, thus producing fevers, more especially in children.

The same author also states that arterial anemia and venous congestion produce nervous symptoms by their influence on the vaso-motor system of nerves, thereby weakening the inhibitory centers and rendering more excitable the various reflex functions of the medulla and spinal cord.

This leads to malnutrition of nerve elements, result-in an impoverished condition of the blood. This morbid blood state presents itself in two forms, viz., innutrition and malnutrition; the former representing a quantitative change or reduction in all the nutritive elements of the blood, while the latter implies a qualitative change in the essential constituents of the blood. Clinically these conditions are recognized as the various forms of anemia. Such conditions are a very common feature of nervous disease, as by far the greater majority of all patients presenting themselves for treatment are found to be below body weight and anemic.

Another common source of nervous diseases is reflex irritations of all kinds. Recent experiments prove that chronic reflex irritation can produce very marked changes in the nerve cells of the spinal ganglia, and this becomes a potent source of nerve instability, more especially in children and young girls by virtue of their special vulnerability.

It is plain that children born of neurotic parentage inherit a weakness, and as growth and development takes place, are peculiarly liable to become victims of nervous disease in the formative periods of their life, especially at the physiologic crises, such as puberty, pregnancy, lactation or menopause.

This neuropathic diathesis may not only be *congenital*, but also *acquired*, and it can be produced in persons born of unhealthy parents by the excessive use and abuse of agents such as alcohol, opium, tobacco, tea, coffee, excessive study and physical strains of all kinds.

Education.—All education should be governed and based upon an intelligent recognition of physiologic laws of growth, and a proper adaptation to them. There exists in every child certain laws of growth and corresponding capacities, the proper development of which depends, to a large extent, upon the general bodily constitution of the individual. The natural law of progressive development is as gradual in its operation as the growth of trees and flowers, and if during its formative period, it unduly exercises or stimulates any organic function, the body will never be brought to the highest state of development of which it is capable.

By thus interfering with the natural sequence of the evolution of the body, we disturb the normal equilibrium of its various parts, and thus seriously mar the harmonious relation which should exist between the mental and physical constitutions. In a well developed organization the normal equilibrium of its every force perfectly balances, and, to use the words of an eminent medical physiologist, "There should be no power in a higher center or ganglia to compel a lower one to do more than it is fitted or is capable of doing."

Clouston says: "The fatigue following their normal use should be absolute, in themselves, to compel periods of *rest*, and yet we all know that it is counted a great power and achievement for any man or woman to possess the power of being able to work, think, feel or wake, not according to their innate capacity, but according to his or her wish, or the imagined necessity of the occasion. The exercise of such a power is really a want of nervous adjustment, and a physical imperfection not to be desired or encouraged; indeed, it is a very dangerous possession to those who inherit a neurotic diathesis." The functional activity of the brain and nervous system is established at different epochs, and perfected at different rates. By cautious stimulation we bring it to its highest development, but by undue haste and excessive use we ruin its normal equilibrium.

In the stimulating process of the educational period the cerebral cortex, which is the seat of all conscious mental action, undergoes a change of function corresponding to its excessive stimulation, and which, if long continued, culminates in a preponderance of nerve action, which is highly characteristic of the neurotic diathesis. The nervous system, with the brain as its controlling center, rigidly obeys the natural law of evolutional precedence, and its functional energies are as gradual in attaining their full force

and capacity as any other special apparatus of the body. Anything, therefore, which has a tendency to force these powers and capacities, interferes with its normal equilibrium.

It has become the custom of the present day for school and college professors to prescribe for their pupils the study of the more intricate problems relating to their special departments, believing this to be the one thing needful to accomplish any and every purpose in life. Thus the ancient Roman law of physical excellence is completely reversed, and with us intellectual superiority and mental achievement take precedence of all aims and duties of life. In the effort to excel, every other part of the organism becomes unduly subservient to the intellect, and the natural physiologic law of evolutional precedence is wholly ignored.

To-day the instruction of children is on purely business principles, without regard to their physiologic strength or capacity. The largest amount of knowledge is to be acquired in the shortest time possible. Rapid progress and intellectual supremacy is the highest test of a desirable school, and the teachers that are most in demand are those who are the most earnest and zealous in their work.

A magnetic power of inspiration is the qualification *par excellence* in a teacher, and that teacher is most in demand who can secure the greatest brain tension during the allotted hours of study.

Intellectual achievement is the goal which all are seeking, irrespective of age, sex, mental or physical strength. The home management of children also contributes its share to this brain tension. Late entertainments, reading exciting works of fiction, social pleasures and strains of all kinds tend to bring about in them morbid growth.

Nervous excitement is at a premium, and therefore prevails in the homes, school, church, and indeed every relation of life.

A recent writer says it is a question whether the competitive examinations, as now carried on in schools and colleges, are not doing more to enervate the mind than to strengthen it. Those who attain the highest honors are generally found to be diseased.

Intellectually speaking, every mind has a track of its own. To place all children on an equal mental footing, when they reach a certain age, is a violence to nature which brings its own equivalent in physical and mental deterioration.

We recognize that certain causes produce certain effects, and we can see how the future generations are influenced by the good health and the proper mode of living of the present, and we must use every means at our disposal toward influencing those with whom we come in contact to study the laws of health, to reform their habits, and instruct in all matters that pertain to hygiene, and further in every way a more complete general knowledge of the human organism, and the laws and forces which govern it. The short duration of life and the habits and modes of living of many persons can be attributed solely to their profound ignorance of themselves. The consequence of their habitual neglect and ignorance entails upon their progeny untold misery, much of which might be prevented by a more intelligent understanding of themselves.

The neurotic diathesis and its baleful influence upon the rising generation is not as well understood by the masses as it should be. The reason for this may be explained to some extent by the prevailing false system of medical ethics which condemns any attempt on the part of the members of the profession to popularize purely medical topics. The relation of the physician to society is not only that of a therapeutist, but also a conservator of the public health. The full mission of a cultured physician is not complete if his educational attainments are solely bestowed upon the medical fraternity, and those coming within his range for treatment. In addition to his strictly professional duties he owes a duty to the public. In the past the attention and efforts of the profession have been too exclusively directed to the solution of problems connected with the cure of disease, and the great importance of its prevention has not been sufficiently recognized.

The duty of every man who deals with his profession as a noble and humane science, is rather to point out the methods of preventing occurrence and eradicating, if possible, latent constitutional defects, than to confine his attention to the treatment of its active manifestations. The vast amount of preventable disease which is filling thousands of premature graves and destroying the hopes and happiness of both the young and the old in every community of our land, certainly demands the earnest attention of the medical profession.

So long as we remain indifferent to this great and growing evil, just so long will nervous disease continue to increase and swell the rate of premature mortality. Several of the more progressive members of our profession both in Europe and America, now recognize the great need of a more general dissemination of medical knowledge among the masses, and are advocating its adoption as one of the most powerful agents in the prevention of the spread of nervous diseases.

"Any work," says Dr. Mann, in his recent work on physiologic medicine, "that we, as physicians, do toward influencing the public to study the laws of health, to reform their habits of living, to promote the use of baths, to encourage temperance, ventilation and due exercise, and to further a more complete knowledge of the human organism and the laws and forces which govern and regulate it, and in diffusing a knowledge of all the means necessary for the preservation of good health, will produce its exact equivalent of results in the prevention of disease. We shall thus develop in the masses an intelligent, self-helping character, tending to robustness of body and robustness of mind."

Another favorable field for a more thorough practical drill in matters pertaining to mental hygiene and the study of physiology is the public school. I am not unmindful that some attempt has been made in this direction; but it is merely an attempt.

Very few pupils (and shall I say principals of schools) realize the full force of one of the first principles of physiology, viz., that within certain limits the growth of an organ is in proportion to its exercise, and that all excessive exercise is followed by a corresponding depression. If this law were thoroughly understood and obeyed there would be less headache and disease attributed to the public school. In cases where the neurotic constitution is inherited, the morbid inheritance is not a mysterious and necessarily fatal doom, certain at some time to overwhelm its victim. It is purely a physical defect, which can be remedied and even cured. We may not be able to

explain fully its intricate pathology, but we know it manifests itself in a great many distressing forms of nervous diseases, and the wise physician, after recognizing the morbid taint, anticipates the pathologic conditions likely to arise, and therefore does not neglect to advise means necessary for its complete removal.

The nervous temperament predominates in American women, which is now recognized to be due to some trophic lesion. This being readily transmissible from parent to child, if we are to avoid its continuance in the young we must resort to such methods as will produce a better type of physical constitution and mental stamina. Hence the great indication in the prevention of nervous diseases, is to harmonize the physical and mental organizations in such a manner that their correlative forces equally balance.

Marriage.—In every individual two streams of ancestry mingle, each furnishing its own specific mental, moral and physical characteristics. As a general law, the stronger character predominates, but never so strongly as to completely overcome the weaker. Pure blood should certainly be the desire and lofty ambition of every individual. The promulgation that "the iniquities of the fathers shall visit the children, unto the third and fourth generation," can not be gainsaid. Our country to-day stands in need of more healthy men and women, and one way to secure these is by wisely regulating matrimony.

Every marriage acts upon society in a fourfold relation, by first affecting the conjugal pair, second their progeny, third their relatives, and fourth the community in which they live.

I believe in certain cases, *marriage should be governed by law*, for in the light of facts, who can truthfully argue that it is nobody's business whom we marry? Habitual governmental regulation of marriage comes with higher grades of civilization.

The Spartans regulated marriage with sole reference to the good of their republic; men were subjected to severe penalties if they married too early or deferred it too late. Unhealthy children were destroyed as unfit to live. (And here allow me to say that such a movement is already projected in this country.) Every care was used by the Spartans to insure the health of infants and children. But instead of studying the interests altogether of the state and nation, we, as a Christian people, should view it from a more humane and philosophic standpoint.

Generally speaking, no special effort is now being made on the part of parents and guardians to choose proper society for their wards. Those easy American habits which permit, unchecked, the free social mingling of the young without regard to the laws of heredity, often result in marriage and intermarriage of consumptives, epileptics and other diseased and defective individuals, while the less demonstrative insane and more demented specimens of humanity have also free access to all classes of society. Even the known vicious and morally perverse often form unions in the more devout families. We know too well the sad import of such thoughtless and ill-assorted marriages; especially, therefore, is it our duty to impress upon the minds of parents the necessity of wisely informing their children on these matters, lest ignorance prove a future source of evil. The responsibility of the medical profession in relation to the coming manhood and womanhood of our race can not be overestimated.

The American, however, is accustomed to regard his individual rights to the exclusion of all others, and the conviction that a man can be what he wills to be, is lodged in the most intimate fiber of his being. Such an idea, however, is erroneous, especially when subject to the laws of heredity, and the results of its misapplication are self-evident.

Physicians who have children growing up under their professional care should endeavor to have them well developed physically, even if it be at the expense of their education. We too often sacrifice the constitution for what is deemed educational necessities.

The prime necessity in our children is to have plenty of bone, blood and muscle, with an accurate balance between the physical and the nervous system, and if something has to be sacrificed let it be their education, and not their physical health.

The children of neurotic constitutions should be kept fat from birth, and when they arrive at the school age their brains should not be forced.

As a general rule, these children are precocious, hypersensitive and possessed of a vivid imagination. Their parents and friends admire their quickness to learn, and urge the teacher to push them forward to the fullest extent, that they may out-distance all competitors. All such precocity should be discouraged and condemned, as it is said by the best authorities to be a sure sign of biologic inferiority.

Dr. Porter of St. Louis, in his studies of school children states "that mental ability is on the average greater in large children than in small children of the same age."

In some recent research in the schools of Kansas City I found, however, that the precocious children were invariably below body weight and poorly nourished.

Our local city authorities are too prone to ignore medical aid in their sanitary and educational legislation. No class of persons are better prepared to give useful advice in such matters than the scientific physician. More especially is this true of education, and a wisely selected medical board should be appointed in every city to inspect the public schools at regular intervals and determine which children should and which should not be allowed to study the more difficult branches.

It is nonsense to regard the child's age as the criterion of its mental strength and capacity. It seems far more logical and scientific to allow the child's *height* and *body* weight to govern this. Definite standards of weight should be fixed for every age and height, and every school boy and girl having a nervous diathesis, whether it be congenital or acquired, should be weighed at regular stated intervals, and if found to be below the fixed standard they should be compelled to forego some or all of their studies and be placed under proper treatment until the loss in body weight, at least, is recovered.

The first evidence of mental deterioration is manifest in a loss of body weight. Children of nervous constitutions should be taught to lead regular and systematic lives, and the necessity of developing fat and muscle, as well as the dangers attending such neglect.

It is outside the province of the responsible duties of a principal of a school to determine which child shall, and which shall not study hard. It needs a skilled physician or neurologist.

Such a plan would also prevent much undeserved

censure of the principals and teachers by the parents complaining that their children had been unnecessarily retarded in their grades.

We must be more active and alert in this direction, and not until we, as a body, take a more decided stand, can we hope to successfully stem the rapidly advancing tide of both organic and functional nervous diseases.

If it be true that the physiologic nerve cell is limited in its capacity, and that its normal activity results in the expenditure of a certain amount of force which, when discharged, presents changes corresponding to fatigue, and that a certain amount of rest is not only capable but necessary to restore or regenerate its normal function, in the absence of which, changes corresponding to its inanition occur; then, clearly, the duty of the physician is to use all possible means to secure the needed *rest* for all morbid conditions of the nervous system in which nervous irritability and instability are the chief clinical criteria, and those which form so great a part or the subjective phenomena of the purely functional neuroses and psychoses.

DEGENERACY; ITS CAUSES AND PREVENTION.

BY ARTHUR ROWLEY REYNOLDS, M.D.

PRESIDENT OF THE BOARD OF STATE COMMISSIONERS OF PUBLIC CHARITIES OF ILLINOIS AND LATE COMMISSIONER OF HEALTH OF CHICAGO.

Practically all recent books and essays upon the subjects quote statistics to prove a startling increase of insanity, of criminals and of pauperism. They either state or intimate that the race will soon be overwhelmed by the number of persons of this character, unless something is done to prevent them from procreating their miserable kind.

Before we accept this gloomy conclusion, we should study the matter and see if the statistics may not be faulty. We may also, with profit, study the conditions that are in the way to prevent those who are normal in their development from continuing so indefinitely through succeeding generations, as well as to recognize and study what influences are at work to counteract degenerating tendencies.

There is ground for hope that some of the apparent increase shown by statistics is not real, but due to the greater care in the census enumeration of later years. Moreover, insanity and other mental defects are now treated as a disease and misfortune, and more frequently come to light while formerly they were too often considered a blemish and disgrace and hidden from view. We may draw some consolation, too, from the fact that latter day segregation of many of this class will prevent their reproduction and favorably impress the figures of the future. Nevertheless, we recognize that whatever arguments there may be against the correctness of the statistics of the question, we yet know that the dependent individual is most numerous and a great and ever increasing burden to the state.

Economic conditions, new to our generation, have arisen with the vast application of steam and electricity and have played a part in the enormous growth of cities. The furious passion for money pervading all classes, and the sway its possession gives in business, in politics, in society, in religion, in courts of law, in legislative bodies, is leading us into danger. Great wealth has led to a desire to still further enhance its power, and giant combinations have been formed, enormous enterprises undertaken, all of which gives a demand for men at wages and destroys the individuality of small concerns, while the fall in the price of produce has made farming unprofitable. These conditions make rural people turn a more willing ear to the promise of shorter hours and regular stipend, and they swell the stream setting toward the cities. The farmer forgets his freedom and his independence and recalls it too late, when he finds himself a mere cog in a great machine in the city, and no hope of relief when his employment is gone. He is then in poverty and hope dies within him. He is tempted or driven to do evil and may never be able to reform. He has not his native trees for company and inspiration. There are no flowers to cheer; no calm for reflection; no quiet for study. Children born and reared under such circumstances start the race of life with a serious handicap.

No argument is needed to prove the power of heredity. It is seen every day in the development of the trotting horse, whose breeding is regulated with such nicety that the height, weight, color, speed and even the cash value of a colt can be told, almost to a certainty, before it is born. The state undoubtedly should make use of this knowledge to perpetuate and upbuild the race, as an offset to the increasing tendency that density of population, through vice and disease, makes toward degeneracy.

In our own country we suffer from the additional burden of imported dependents. Indeed, it has been said that foreigners furnish one-eighth of our population, one-third of our paupers, one-third of our criminals and one-third of our insane. It is true, I believe, that we have a law of Congress to prevent the importation of dependent persons. So long, however, as the conditions of life are easier in our own country, the degenerates of Europe and Asia will find their way to our shores.

A strict medical supervision of all marriages is strongly advocated by some writers, as a safeguard against the increase of this class of persons. It is unquestionably wrong for degenerates of a pronounced type, and those who are dependent, to propagate their kind, and there can be little doubt that the state has a right to step in and restrain the weak or the willful of these classes, through the application of medical knowledge, to the case of every applicant for a marriage license; but whether or not this will cure the evil is a question that should be carefully studied. It is not the purpose of the writer to dampen the ardor of those who would regulate the evil by law, on the contrary to urge it and freely avow belief that steps should at once be taken, beginning at the marriage license windows of our country, to prevent the union of those who, by the almost unerring law of heredity, will reproduce a brood which will be a charge upon the state or a burden to society. Proper laws, intelligently enforced, will directly restrain a great many. It is our belief, however, that their chief use will be to form a focusing point, from which knowledge shall radiate. We believe further that it is only through the proper education of the masses that those unfit to reproduce their kind will be restrained. And we believe, moreover, even though it be true that the race is degenerating from one generation to another, where the conditions of life are unfavorable, it is equally true that there is a constant regeneration going on where the conditions of life are favorable. Laws alone can not cope with the question. Rules and

statutory enactments are of but little value, unless backed by a healthy public opinion. But there are agencies constantly at work to counterect the degenerate tendencies that should be considered before we despair of the race.

While it is necessary to look evils squarely in the face, it seems wrong to enumerate them too often; to discant too loudly upon the ills that beset us, or to see only the dark side of the picture. Human nature is prone to brood over the sorrows and trials of life. The uncanny things are too apt to be kept prominent and we are too likely to forget the cheery, bright and sunny side of affairs. The world contains more sunshine than shadow, more joy than sorrow, more smiles than tears, more righteousness than sin, more good than evil, more charity than theft. Adam's sin is repeated still, but there is an ever-progressive spirit of the Nazarene pervading every day life.

It is well to prevent the degenerates and dependents from procreating, but it is infinitely more important to correct whatever there be in our civilization that drifts toward degeneracy. Human beings crowded together so close that the home loses its individuality, its sanctity and its seclusion; or that vitiates the air that is breathed; that makes artificial feeding of old or young necessary; that pollutes the drinking water or in any way hampers physical growth. Whatever there is that blunts the moral sense, that whets the appetite for alcohol, that excites the passions or gives opportunity for licentiousness must be wrong. All these evils are fostered by too close living in tenements, whether located on the boulevard or in the slums, and just as sure as a cloudy sky portends the coming of the storm, such conditions lead on directly to drunkenness, crime, idiocy and insanity. Whatever is being done, or whatever may be done to make country life profitable and possible is an aid to segregation and must therefore be a step in the right direction. The trend of population toward large cities is not a good omen for the race and calls loudly for legislation that will turn the current back again. The great and rapid growth of our cities, that receives so much admiration and is quoted as such signs of prosperity and greatness, will ultimately result in a plague upon humanity if some wisdom does not appear and set the tide the other way. Can it be that the crowding will go on till the curfew will be necessary to segregate the young in their homes, that the evil of street association, as a school of vice and crime, will be lessened? It is well to pause and inquire where is the profit, in the end, of clustering of industries in large cities, if sweater's dens must be the accompaniment. It may be well to consider whether or not those having knowledge of medical sanitation and sociolgy should not have a larger place in our legislative assemblies. It seems that their valuable knowledge should be used in deciding our laws of immigration and other legislation relating to the welfare of the race, while it would lessen the too common tendency to decide such grave questions upon the sordid demands of barter and exchange.

We have with us now and always have had splendid and powerful agencies, operating with vigor, as a stay to crime and a help to humanity. Chief among these is the church through all her divisions and denominations, for whatever the differences as to church government may be, their teachings are as one on the question of morality and right living.

I wish, however, to speak more particularly of an agency that is paramount to all others in its influence toward the regeneration of the race; an agency that has already done a vast amount of good and that promises, if properly backed and intelligently followed, to solve the problem; an agency that strikes almost at the root of the evil; an agency almost divine indeed—for it is none other than the new woman. I do not refer to the new woman of newspaper creation—not the woman who hopes by copying the follies of man or his wearing apparel, to emancipate herself. Not the woman who would wage a war of strife and contention with men. She is not new—she is as old as civilization itself.

The real new woman understands that there is within her an inherent and natural power to command the actions of man and sway him for good or for evil. She realizes her power; and that hers is the enormous responsibility to shape and control the destiny and perpetuity of the race. She realizes that it is her high and divine privilege to be the mother of mankind. She realizes that it is among her first duties to equip herself, mentally and physically, to graciously bear the joys and responsibilities of maternity. She realizes that there is no loftier mission on earth than to fashion the character and train aright the intellect of the growing child. She realizes that the budding boy is the coming man. She realizes that it is a crime for man to grow so grasping as to enslave his fellow creatures of either sex. She realizes that the good things of this earth are God's bounty and intended for all his children alike. She realizes that the mad race for wealth, with its rapid concentration "makes countless thousands mourn." She realizes that the frenzy for gold is every day enhanced by the demands of some of those of her own sex, as they struggle to reach the summit of fashion and social power. She realizes that the mother is largely responsible for the traits of the child, other than those of heredity; and that it requires no more time to learn and love the ways of purity, than to learn the ways of vice and iniquity. She realizes too that proper training is the best preventive of perversions of every kind. She has established and is all over the country conducting branches of the greatest institution in American history—I refer to the kindergarten.

The kindergarten has reversed the old order of things, when the daughters of the poor and uneducated, and perhaps the vicious, were made the companions, the guardians and instructors of children in the homes of the rich. Now young ladies of good position in the world graduate from universities to take positions in the kindergarten, qualified to mold, fashion and discipline the minds of children of the humblest, beginning with the child at the very dawn of its intellectual development. Devotees of this new cause deem it a privilege to work all day in the creche, caring for children of mothers who must toil for daily bread.

The new woman believes it is a perfectly normal desire to want to wash and dress, to entertain and caress a helpless babe, even though it be of lowly birth, and if the babe should be her own, she counts the moments she is forced to be separated from it. She feels pity toward her married sister who dwarfs her maternal instincts, or denies herself the boon of motherhood, or who shuns the society of the children she has unwillingly borne. The new woman sees in life upon a farm better discipline for the mind than

can be found in the greatest counting room. She sees that the same farm can do more for the physical development of men and women than any manual training school in the land. She sees that the music of the birds inspires deeper thoughts of God and Nature than all the grand organs in the universe; that the sighing of the wind through the trees and the patter of the rain on the roof inspire the loftiest emotions.

The new woman is she who founds homes and settlements among the poor, and successfully conducts them. She consoles the needy in their trouble and feeds them when they are hungry. She encourages the idle to work and helps them to secure it and if necessary she instructs them how to perform it. She founds and conducts useful societies, classes, schools and clubs of every sort among the poor. Her spirit and her genius build fresh-air sanitariums, floating hospitals, and in the summer time sends from the alleys and slums the debilitated weaklings to the green fields, the sylvan groves and the babbling brooks, to drink in the inspiring delights and breathe the pure air of the countryside. I will not attempt to enumerate all the institutions she is working through, for they are well nigh countless and daily multiplying.

When the new woman's hand is sought in marriage, she is likely to have inquiry made as to the young man's health and his morals, rather than inquiry as to his bank account. What his wealth in the great distinguishing characteristic that elevates him above the animal world—his manhood, his judgment, his intelligence? It is through the new woman that society will eventually come to apply the same rule and exact the same standard of morality for men that it does for women and eventually elevate him to her plane.

The new woman has learned the terrible cost in pain and suffering to her sex and her offspring that so frequently comes from a union with dissolute men. She has learned, through the advance of medical science, that the harvest reaped from a sowing of "wild oats" in her husband's youth is too often one of disease and death to herself and a pitiful inheritance to her child.

Higher education through schools, great universities and libraries is not enough. Kindergartens should be founded in sufficient numbers to reach all the young. The new woman will multiply the kindergartens and reach the degenerate or wayward before habits of thought or action are formed and do for the infant mind all that training and example can do.

Through the present work of the new woman and its future development must come the public knowledge and the public sentiment that will lead to the necessary reform to let daylight through the slums; to raze the unsanitary tenement to the ground; to pull down the towering buildings that harbor miasm in their shadow; that will make it possible for human beings even in cities to live on the surface and not be forced either into the air or under the ground.

Through this direction of forces, cottages will be built for all so that man can return to his primal condition. Even the very poor will not be denied free access to God's sunshine, pure air, green grass, the shade of trees or the beauty and fragrance of the flowers.

A vast number of holy influences are constantly at work that realize the necessity of proper care and training of children while they are young. Let us hope it will go on till our philanthropists and our State legislatures will see the economy of laboring more for institutions for the young; for if they be trained aright, it surely means economy in hospitals, asylums and prisons.

36 Washington Street.

THE PSYCHO-NEURAL FACTOR IN SURGERY.

Read at the Meeting of the Mississippi Valley Medical Association at St. Paul, Minn., 1896.

BY C. H. HUGHES, M.D.

PRESIDENT OF THE FACULTY AND PROFESSOR OF PSYCHIATRY AND NEUROLOGY, BARNES MEDICAL COLLEGE, ST. LOUIS; HONORARY FELLOW BRITISH MEDICO-PSYCHOLOGICAL ASSOCIATION, AND OF THE CHICAGO ACADEMY OF MEDICINE.

ST. LOUIS, MO.

As a thorough knowledge of general and special pathology is essential to the soundest surgical judgment as to the propriety and necessity of an operative procedure, so is a knowledge of the nervous system of the patient and the relation of his nervous system to the local disease found essential to proper diagnosis and prognosis. The time is coming and now is when the surgeon should have wide neurologic and psychiatric knowledge in order to avoid fatal mistakes and to most successfully practice his art. The manner in which the necessity of a grave operation is announced may to certain psychologically unstable constitutions pre-determine a fatal issue, or it may give to a doubtful issue a possibly favorable result. There are some constitutions so neuropathic and psychopathically predisposed that the shock of such an announcement would precipitate a crisis of mental alienation, and it were better that the proposed operation should be abandoned than insisted upon under such circumstances, or that the patient should be gradually approached and prepared by cautious speech and suitable precursory, reconstructive and tranquilizing neurologic treatment. Some patients before being operated on should be made almost entirely over in the tone of their nervous systems and some should be let alone, tranquilized and made comfortable and allowed to die in happy euthanasia. What, for instance, is the use of exsecting a far-advanced cancerous uterus after the cachexia has long persisted and the nerve centers have become irreparably neuropathic and the neurasthenia has become profoundly irreparable from the prolonged pain and insomnia. The rational process would be to stop the pain and insomnia, correct as much as possible the neuratrophia that exhausts and makes the patient's last days comfortable by neurologic and antiseptic treatment and the best surgical suggestion without the knife. In fatal surgical results the reputation of operative surgery suffers often because overlooked neuropathic conditions were at fault.

In my judgment the previously applied skill of a neurologic clinician would postpone many operations indefinitely which are now fatally performed, and properly prepare other cases for the surgeon's knife and a successful surgical issue, which are now doomed when the operation is decided upon, because conditions of endurance of the operation are not in the nerve centers of the patient.

The cause and effect of psychic shock in different patients are not always considered as they should be by either physician or surgeon. The possible evil effects of words and acts at the bedside or before an operation that tend to paralyze or even produce a paresis of hope are not always duly considered. The

surgeon who bluntly announces to his patient, after revealing the necessity for the knife and having all things ready, "now I am going to operate, the proceeding may kill you, but you would be better off dead than alive as you are, let us hope for the best," must have a strong-nerved, brave subject to not be somewhat depressed by such an announcement, and such a depression before a further depression of vital centers by chloroform or ether, even in the strongest nerved is not good clinical practice. It doeth not "good like a medicine." Such a procedure may have the virtue of candor to commend it, like the candid announcement by the physician that his patient is likely to die. If he is saved it will be "by the skin of his teeth." Recovery is not the rule when such premature prognoses are announced, sometimes because the patient could not have recovered by reason of an incurable malady and sometimes of the vitally depressing effect of the speech that destroys hope and removes its buoyant influence from those vital nerve centers that influence the metabolisms of the organism and the assimilative processes of organic life and reformations of tissues.

In our intercourse with patients, medical or surgical, the untoward and often fatal influence of depressing mental suggestion on the patient should always be avoided. Hope, that springs eternal in the human breast if we do not interfere with it, is itself a buoyant medicine, and faith in the physician or surgeon is therapeutic power that should never be rudely shattered by us. Candor is to be commended, but it can be too bluntly displayed and often is, for the welfare of our patients. Besides, the physician's or surgeon's judgment may be at fault. It often is. There is more vital resistance and power of repair in the patient than the medical or surgical attendant thinks or knows. Vital power is not always a definitely measurable quality, depending as it does, upon ancestral factors in the upbuilding of the constitution—the cerebro-spinal axis and the sympathetic system of the patient—of which we are never fully cognizant. The patient should always have the benefit of this doubt in our prognostications before him or to him.

The little surgeon who pompously displays his tray of instruments before his trembling patient, and to his woful, wondering mind descants upon the operation he is about to perform and the chances of recovery or displays a nonchalant, unfeeling mien, acts in an unprofessional manner and does not increase his patient's chance of getting well quickly. And the great surgeon who takes his patient into the operating room and places him while conscious on the table, himself with instrument in hand, while white-aproned attendants gather around the victim, approaching with sponge and bottle and instruments and appliances of the impending operative procedure, is not so wise a surgeon and does not so fully consider the effect of depressing psychic influences as he who chloroforms the intended subject of an operation in another room or in the same room without these depressingly suggestive influences.

Had I continued the active practice of surgery (of which I once had, as you know, ample clinic experience) I should never vaunt the implements of my art before my patient, at least before he should recover from the operation, nor anesthetize him in the presence of any depressing influences. Where practicable, I would for purely elevating psychic effect, begin the administering of the anesthetic in the most cheerful room I could prepare; I would drape its walls with suggestions of hope and inspirations of courage. I would have nothing about me at that time suggestive of blood. I would cheer him so far as I might without falsity; mention similar cases, if I could, that had undergone his approaching ordeal successfully and let him take his operating couch and anesthetic as "one who lies down to pleasant dreams." I would proceed thus because I am a psychologist and have added something more than operative skill to previously acquired medical knowledge. I would be as tender with him about inflicting the mental pain of dreaded apprehension as "one who would not needlessly set foot upon a worm." I would do thus, not only because it would be the dictate of tender feeling, but because a sound psychology and psychiatry enjoin it.

THE STATISTIC EVIDENCES OF THE VALUE OF VACCINATION TO THE HUMAN RACE, PAST, PRESENT AND FUTURE.

Read before the American Medical Association at the Jenner Centennial Celebration, held at Atlanta, Ga., May, 1896.

BY EUGENE FOSTER, M.D.

PROFESSOR OF PRINCIPLES AND PRACTICE OF MEDICINE AND STATE MEDICINE AND DEAN OF THE FACULTY OF THE MEDICAL DEPARTMENT UNIVERSITY OF GEORGIA, AUGUSTA, GA.

(*Continued from page 911.*)

Now to a circumstantial examination of the charge of transmission of syphilis by vaccination.

The medical literature of every civilized nation has been ransacked for the purpose of substantiating this charge. "The London Society for the Abolition of Compulsory Vaccination," ever active in seeking and disseminating all information detrimental to the cause of vaccination, has put together all cases of alleged vaccinal syphilis which its active investigators could hear of. Here is a copy of the original paper from that society, received by me in 1884.[44]

VACCINO SYPHILIS.

The following is list of authenticated and published cases[45] of transmission of this one disease alone:

Lancereaux has published the following cases of vaccino-syphilis:

By Cerioli	40	By Lecoq	2	By Chassaignac	1
By Tassani	46	By Galligo	14	By Hérard	1
By Surgeon B.	19	At Rivalta	46	By Adelasio	2
By Hübner	8	By Trousseau	1	By Monell	1
By Marcolini	40	By Maronni	34		
By Viani	2	By Devergie	1	Total	258

To these I have added the following:

By Hutchinson	24	At Lebus	18	By Fuqua	32
By T. Smith	1	By Depaul	59	By Cullimore	1
By Hulke	1	By Sebastian	1	In Algiers	58
By Oldham	3	By Collins	2	Total	478

M. Briquet appropriately says: "A competent observer and a complete observation, reported with such details as render the statements capable of being checked by the reader, are ndispensable requisites for establishing the reality of an ordinary fact in medicine; and if for establishing an ordinary fact, how much more when the facts alleged are confessedly so rare, and so contrary to all previous experience, as these must be admitted to be." To correctly investigate the question of vaccinal syphilis, we must first determine the question of inoculation of the lesions of secondary syphilis. Experiments by competent observers have demonstrated that condylomata, ulcerated tubercles, psydracious pustules of ecthyma, pustules of acne, mucous patches and the blood of syphilitic subjects, may be inoculated into the constitution of the person not already infected with syphilis. Now, it is an admitted principle in the teachings of syphilography that the secretions from pathologic lesions, not themselves syphilitic, although occurring upon the bodies of syphilitic persons, do not contain the virus of syphilis, unless admixed with blood. Gonorrhea upon a syphilitic patient reproduces gonorrhea by inoculation, and not syphilis; and the same is true of chancroid. All of these lesions of secondary syphilis, except the blood, may be eliminated from this discussion, for we can not imagine how any other of them could contaminate vaccin matter in its rational propagation.

[44] From my paper before American Pub. Health Assn.

[45] These cases have been fully examined, and a brief analysis of some of them will be presented later on.

Is the effort to inoculate a healthy person with syphilitic blood invariably successful; and, if not, what proportion of success will attend these efforts? The following presents the results of all such efforts to be found detailed in the most authoritative works upon syphilis:

Name of experimenter.	Number of inoculations.	With success.	Without success.
Anonymous surgeon of the Palatine	9	3	6
Waller	1	1	. . . .
Gilbert	1	1	. . . .
Pellizzari	5	1	4
Lindwurm	1	1	. . . .
Thiry	4	. . . .	4
Lalagrade	3	. . . .	3
Diday	20	. . . .	20
Total	44	7	37

Thus, gentlemen, we see that where intelligent physicians, bold enough to test the matter, after deliberately and carefully endeavoring to produce syphilitic infection by inoculating healthy subjects with syphilitic blood, failed in 84 per cent. of all such efforts, only those efforts were successful where, as by Pellizzari, the anonymous surgeon of the Palatine, Waller and others, large surfaces were denuded and syphilitic blood in large quantities kept for many hours to the denuded spots.

It is, of course, impossible in this discussion to enter into an extended or minute examination of the cases of alleged transmission of syphilis by vaccination. The following embraces nearly if not the entire list of reporters of vaccinal syphilis, as given in the best works upon syphilis:

Name of Reporter.	Number Vaccinated.	Number Infected.	Number not Infected.
Cerioli	46	40	6
Tassini	64	46	18
Surgeon B.	24	19	5
Hübner	13	8	5
Monell	1	1	. . . .
Marcolini	40	40	. . . .
Viani	2	2	. . . .
Lecoq	2	2	. . . .
Galligo	14	14	. . . .
At Rivalta	63	46	17
Trousseau	5	4	1
Marone	34	34	. . . .
Devergie	1	1	. . . .
Chassaignac	1	1	. . . .
Hérard	1	1	. . . .
Adelasio	2	2	. . . .
Totals	313	261	52

HUTCHINSON'S CASES.

Series of Cases.	Number Vaccinated.	Number Infected with Syphilis.	Number not Infected with Syphilis.
First	12	10	1
Second	26	9	17
Third	13	1	12
Fourth	Unknown	1	Unknown
Fifth	Unknown	2	Unknown
Sixth	Unknown	1	Unknown

It is absolutely necessary, in an "investigation of alleged cases of vaccinnal syphilis, to ascertain, 1, whether we are really dealing with syphilis: 2, whether, if this be so, the syphilis is not hereditary and a mere coincidence or evolution of vaccination; 3, whether, if it be acquired syphilis, this has not some other origin unconnected with vaccination, or attempt to vaccinate; 4, whether, if the acquisition of syphilis be reasonably traceable to vaccination, or attempted vaccination, there is evidence, direct or presumable, that the so-called vaccination had been done from a genuine vaccin vesicle, and that the products of that vesicle had not been mixed with some of the inoculable products of syphilis. Not till this was settled would any question arise about admixture of blood. The interest and importance, after all, of the cases in which vaccination is alleged to have communicated something beside its own infection, turn entirely upon whether the vaccination had been performed with unmixed lymph of genuine vesicles—vesicles about which no competent person would make a mistake."

Seaton (Handbook of Vaccination) appropriately says: "It must obviously be impossible to discuss at length, within such limits as in a general treatise of this kind could be allowed, all the cases that have been cited as evidences of the communicability of syphilis by vaccination. The most satisfactory course will be to examine carefully three or four cases, typical of the kinds of proof which have been advanced of this occurrence."

The following is an extract from his review of alleged cases of vacinal syphilis: "1. An epidemic of syphilis reported by Cerioli as having occurred in 1821 (inquiry made eight months after its orgin. The account given of this epidemic is of the loosest kind; it was not proved, or even alleged, that the child, from whom the lymph supposed to have been the origin of the outbreak, was taken, had ever had syphilis); 2, another epidemic in 1841, seen also by Cerioli (investigated likewise after a very long lapse of time), the child from whom the lymph was taken never had syphilis: but it was said that the year before his father had had syphilis."

Surgeon B.: "It appears that in a town in Germany twenty-four people belonging to different families, were in February, 1849 (some on the 13th, some on the 14th, and some on the 15th), revaccinated, as they supposed, by him. There is no statement of vaccin vesicles having been produced in one of the cases; but at the end of three or four weeks (*i. e.*, the ordinary period of incubation of syphilis), ulcerations of a syphilitic character began at the points of inoculation in nineteen out of twenty-four persons operated on, and these were followed in due course by constitutional syphilis. Here was syphilis, but no vaccination. What could have been the cause of it? The vaccinator who was inculpated asserted that the operations were all done with lymph from a child who was *fort et sain*, and who, having been vaccinated on the 4th of the month, had regular vaccinia. We shall see immediately how far this statement was borne out; but it must first be noted—and is an illustration of the want of precision generally attending these accounts—that we are nowhere distinctly told whether the so-called vaccinations, or any, or which of them, were done direct from the child, or whether the stuff taken from it might not have been collected on glasses, points, or tubes. For all that appears to the contrary, there was at least the possibility of a mistake (such as has happened many times with regard to the matter of inoculable diseases) of taking lancets, or glasses, or tubes charged with one kind of inoculable matter instead of another. But, assuming that the matter used came from the source indicated, what was the state of this source? Though it was said to be from an infant *fort et sain*, and that this was *surabondamment démontré par plusieurs témoins*, a different account was given by other witnesses; and a doctor, who saw the child on the 21st of February, a week after the lymph was taken off, when of course no suspicion of anything wrong had yet arisen, testified to the existence of some erythematous eruption, which was said to be like syphilitic roseola, and it died on the 24th, three days after his visit, of hydrocephalus. But, more importantly, what was the state of its arm? It turned out that, according to an eye-witness, there was on the eighth day of the child's vaccination not a vestige of vesicles, *aucune trace de boutons*, and yet two days later, the acconnt tells us, several vaccinations were performed from it and lymph continued to be extracted from it for two days."

"In Hübner's case—a case of malpractice—there could be no doubt of some children having been syphilized, but no investigation of the circumstances was made till eight months afterward, and the account of the so-called vaccinations (in most of which it is quite certain, and admitted, there had been no proper vaccine effect), was only what could be got from the statements and recollections at that interval of time, of the mothers."

Trousseau's case: "A young woman was under treatment in the wards of the *hôtel-dieu* for a uterine affection, apparently of a non-specific character, at a time when there were some small-pox cases in the hospital, and wished to be revaccinated. This was done by three punctures on each arm, from a healthy child at the time, and which, for anything that was ever known, never exhibited any taint. Four children who were vaccinated with its lymph at the same time with this young woman, went through vaccinia in its regular way and never had any subsequent syphilitic affection. On the young woman's arm slight papules only arose, and the revaccination was looked upon as having failed. She remained in the hospital a month after vaccination, fully the time necessary for the syphilis, if there had been any imparted by the vaccination to have incubated, and she went out without anything the matter with her arms. At the end of another month she attended at the hospital for treatment of her uterine complaint, and showed them two sores on one of her arms, the character of which was not at first recognized, but which turned out to be undoubtedly syphilitic. It was not known at the time, but was afterward ascertained, that she was a young woman of very loose character. Now, assured by no one who knows in what extraordinary situations chancres have been met with, such as the cheek, the corner of the eye, in every sort of situation in which there could not be any, and never was any, suspicion of vaccination, can say this was a case entirely free from fallacy as to the source of the syphilis."

"The occurrences at Rivalta, to which so much interest has attached, were of a different kind. In 1861 there occurred in this village a very remarkable syphilitic epidemic. Three similar epidemics are said to have been noticed in different places before—in 1814, 1821, and 1841—and if we include an account given (though not till some years after the occurrence took place) by a Dr. Marone, a fourth in 1856. It is certainly very singular that all these epidemics should have occurred in Italy, and none resembling them met with elsewhere. Whatever their origin, the facts are of the deepest interest; a number of children affected at one time with syphilis; these infecting their nurses and mothers; the mothers infecting their husbands; the children infecting one another by the act of kissing, or by the spoons used in feeding; and whole families infecting one another by merely being huddled together in confined and crowded dwellings. For it must not be supposed that only persons who were at the time the subjects of vaccination were the sufferers. Various epidemics of this kind, quite as singular and quite as inexplicable, have occurred under circumstances entirely unconnected with vaccination, and indeed before vaccination was heard of. * * * In the five epidemics specified in the beginning of this paragraph, a vaccinal origin was alleged; and this was made in the Rivalta case the subject of careful inquiry by a scientific commission. Unfortunately, however, the inquiry did not take place till four months after the outbreak; and as in no single case of the children said to have been syphilized by vaccination had any application been made to a medical man on account of the condition of the arm, facts and dates on the exactitude of which everything depends had to be got as they could at such distance of time from the testimony of the villagers, for the most part ignorant and prejudiced. Under these circumstances, it is not surprising that different conclusions were arrived at; and though Dr. Pacchiotti and the other commissioners, after a most careful and painstaking inquiry, reported themselves satisfied of the vaccinal origin of the disease, Sperino, who also went to Rivalta and there investigated the circumstances, and treated some of the cases afterward at Turin, was equally satisfied that their origin was independent of the vaccination. The story, as regards the vaccinal origin, is this: A child (Chiabrera) apparently in good health, but really incubating syphilis, was vaccinated with some lymph obtained in a tube; this child's arm was used on the tenth day for the vaccination of forty-six children, and one of these forty-six children, named Manzone, again on the tenth day furnished lymph for vaccinating seventeen children. Of these sixty-three children, forty-six had within two months a disease considered by the commission to have been syphilis—the syphilitic symptoms having manifested themselves in some cases within ten days, and as a mean at twenty days from the vaccination. Now, in explanation of these events, can we admit that the matter taken from Chiabrera's arm contained the contagion of the constitutional syphilis, which at these intervals of time the children manifested? Not, assuredly, unless we are prepared to give up all we have been taught as to the incubative period of constitutional syphilis. For it would have required from three to five weeks for that disease to manifest its primary symptoms. [Lee gives the period of incubation at from three to seven weeks. Rollett gives a mean of twenty-six days, and out of a large number of cases there was only one case in which it was under fifteen days. In four cases, in which the inoculation was by blood, the minimum was twenty-five days and the maximum thirty-five. As recent testimony on this point, it is proper to state that Hutchinson says, "The period of incubation, prior to the first specific induration, will usually be five weeks." [43]] But if this teaching has been erroneous and true constitutional syphilis can produce its primary symptoms within ten days, then, indeed, we can understand how, if syphilitic matter was mixed with the lymph, either in the original tube or through the lancet employed in Chiabrera's vaccination, an irregular vesicle might result, such as that stated in Sperino's experiment with soft chancre, which Baumés and Viennirs held to contain the two viruses mixed. It must be remembered that we have no reliable account whatever of what was the sort of vesicle or result on Chiabrera's arm, from which the so-called vaccinations were done. From such a result as Sperino's experiment affords, a careless man might, a careful man would not, take what he called lymph; and I have very little faith in the proceedings of any one who evidently habitually used tenth-day cases. We might not really, then (that is, supposing the incubation difficulty got over, which it must be, or else the Rivalta cases as connected with vaccination fall of themselves) have any difficulty in accounting for the propagation of syphilis, for hard and soft chancres would fall in the same category. But we should have more hesitation as to whether vaccinia also might be communicated at the same time; and, in fact, in what degree the Rivalta children who were syphilized were also vaccinated, it is impossible to say. I can quite conceive that if the vesicle on Chiabrera's or Manzone's arm was all like that produced in Sperino's experiment, some spurious vaccin result might follow in some of those vaccinated from them. There is certainly no satisfactory evidence of any of the children ever having had regular vaccinia."

(To be continued.)

[43] Rollett's *Traité des Maladies Vénérienne.*

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

The regular meeting of the Academy was held Oct. 15, 1896.

Dr. W. XAVIER SUDDUTH acted as Chairman.

The subject of "Infantile Paralyses" was discussed from various specialistic standpoints. Dr. ROSA ENGELMANN opened the debate by first exhibiting a a porencephalic brain, obtained from a babe seven months old upon whom a craniectomy was performed by Dr. Alexander Hugh Ferguson. She showed photographs of the asymmetric head, site of the operation and pathologic intracranial cysts, as well as specimens of the brain, spinal cord and vertebral canal, from which the nerve exits and plexuses are demonstrated, for it was at first believed that these were absent, impossible as such a condition seemed. The cord itself presented no cauda equinus and was undeveloped.

Dr. ENGELMANN then discussed the

CONTAGIOUS AND INFECTIOUS DISEASE ETIOLOGY OF INFANTILE PARALYSIS.

That a relation between the infectious and contagious diseases to cerebral, spinal and terminal palsies does exist is undisputed, but what that relation is, is only explained in general terms. No answer is given as to the reason of such comparatively uniform action upon nervous structures by such widely differing bacterial or noxious agents as syphilis, tuberculosis, smallpox, typhoid fever, scarlatina, purulent affections, pneumonia, measles, diphtheria, etc. Why a poliomyelitis or neuritis should be a sequela to these diseases on the one hand, and, on the other, be an independent entity of a presumably specific origin, is inexplicable. Of course, we recognize the immaturity and consequent instability of infantile nervous structures as a predisposing factor, but a wider and more accurate knowledge is dependent upon future neurologic research and accomplishment. A discussion by the members of this Academy upon a history and specimen of a case of porencephalia in a babe seven months old may throw some light upon this evident congenital condition so often associated with cerebral palsies and acquired infantile cerebral palsies.

The brain was obtained after a craniectomy done for me by Dr. Ferguson. There was a microcephalic state, as shown by the photographs, but I should have recognized other pathologic conditions and known of the uselessness of surgical interference. □ However, had no operation been done, no postmortem could have been obtained, and a valuable specimen and knowledge of great service to me would have been lost. The history is as follows: Parents Russian; father healthy; no history of nervous diseases, alcoholism or syphilis. Maternal grandparent consumptive; mother undersized, with a pronounced dorso-lumbar kypho-scoliosis and rachitic pelvis. Measurements made by Dr. Rachel Yarros, as follows: bi-iliac, 21 c.c.; anterior superior spine, 20 c.c.; external conjugate, 11 c.c.; anterior conjugate, 9 c.c. The very prominent synchondrosis was found about two inches to the left. Married at 20. Three children born at term and without difficulty, with the assistance of a midwife. No miscarriages. Two children died at the ages of four and eleven months respectively of pneumonia and summer complaint. One living healthy child of 3½ years; subject to fright and hardships while carrying the youngest child; was sick in bed three months; complained of pain in the side; could not walk. She also gives a description of sudden and copious white discharge, in the nature of a flooding, possibly the breaking of an abscess during this state. Labor was prolonged, and the physician told the husband it was a cross presentation. Instrumental delivery. Child asphyxiated for twenty minutes and to all appearances dead. The father said the baby's left arm was broken, because the physician put it in a splint. At the seventh month the child was brought to me, showing marked asymmetry of head with a deep left parietal depression, occipital depressions and elevations—in fact, great irregularities and absolute cranial synostosis. Some facial asymmetry, but no observable facial or general paralysis. History of convulsions since its second

week, increasing in frequency and severity until almost constant, beginning with the ocular and facial muscles and becoming general. Strabismus; blind and seemingly deaf; idiotic. Perfect body development without other anomalies. The child came to me with a history of cranial deformity from forceps injury, but upon noticing the synostosis, I said that the condition was congenital, and there was a conformation of the skull cap due to intra-uterine pathologic cerebral conditions. The operation and postmortem proved the correctness of this view. On chiseling, the bone was found much hardened and thickened, especially at the sutures. A cyst was noticed and thought to be hemorrhagic by the operator, but the child was so collapsed that the opening of it was left for a second operation. The child died two hours after the operation. The brain was removed, and I now present it to you for inspection. The cord pulled up from the canal was at first thought to be without spinal nerves. A postmortem was made later which demonstrated their presence. The organs were found normal. The only demonstrable pathologic condition was enlarged mesenteric glands, which looked tubercular. There were adhesions of the coverings to the brain, and these and the cerebral tissue when fresh showed decided inflammatory changes, and pointed markedly to a fresh meningo-encephalitis. The sclerosis and atrophy were doubtless due to previous intra-uterine lesions.

As to the cause, the question of pressure during pregnancy can be excluded by reason of the transverse position. It does not seem plausible that labor or forceps pressure produced this condition of sclerosis and atrophy that must have been preceded by intra-uterine acute inflammatory conditions of long standing, and due possibly to a pus infection in the mother previously mentioned, instead of developmental reversion. The future may show that teratologic conditions have their origin in active fetal disease.

Were there prenatal circulatory disturbances, hemorrhages or inflammatory disease of the middle cerebral artery, or obliteration early in fetal life, or an intra-uterine polio-encephalitis producing this terminal condition of sclerosis and atrophy? Was the synostosis due to the agenesis or vice versa? Ziegler inclines to the former view. He says: "In partial defects the skull cap is most often closed, giving rise to free spaces filled by fluid." Was this agenesis due to active intra-uterine disease or to developmental arrest or perversions, or both?

SYPHILITIC ASPECT OF INFANTILE PARALYSIS.

Dr. Wm. L. Baum—The syphilographer is not frequently called upon to see cases of infantile paralysis. When it is considered that between 75 and 80 per cent. of the children suffering from hereditary syphilis are born dead, or die before the end of the third month, we can readily see how few cases of hereditary syphilis there are in comparison with the supposed number. The lesions of the nervous system in these cases differ but slightly from those in the acquired type, and many of the so-called pathognomonic signs of syphilis are not, strictly speaking, syphilitic manifestations, but symptoms of a dyscrasiæ which may differ widely from syphilis. The specific lesions most frequently met with in infantile paralysis are most often confined to the cortical substance and meninges of the brain. However, occasionally there are lesions occurring in the bony capsule which indirectly affect the nervous manifestations, and then the lesions also found in the medulla and cord. The specific disease itself gives rise to congested conditions which are subsequently followed by atheromatous conditions of the cerebral arteries. These are frequently followed by the development of smaller thrombi or miliary aneurysms. The formation of these thrombi or aneurysms, especially the rupture of the latter, gives rise to various paralyses which are met with in children. In those cases which are due to the formation of a thrombus the paralysis is gradual in its onset. Where it is due to a rupture of a small miliary aneurysm, the paralysis is more sudden. In both classes we have excellent results from treatment—rapid resorption and retrogressive changes to the normal. In the cases, however, where there is a true sclerosis, also accompanied at times with the formation of a thrombus or rupture of a miliary aneurysm, there is softening and a true destruction of nerve tissue. These cases show no improvement from treatment.

The general practitioners and syphilographers are frequently misled into an erroneous diagnosis of the syphilitic origin of infantile paralysis upon the strength of the results obtained by therapeutic measures. It is too frequently forgotten that iodids and mercurials are of great benefit in a great many diseases of non-specific character, and when these individuals recover as a result of the administration of these anti-syphilitic remedies a diagnosis of syphilitic disease is made. This is certainly a mistake, for if there are no other corroborative evidences of a syphilttic disease present, we are not justified in calling the symptoms, which may have a widely divergent origin, syphilitic.

Fournier has reported a number of cases of syphilitic paralysis, in one of which there was enlargement of the lumbar vertebra, followed by paralysis of both legs. This condition subsided rapidly upon the internal administration of anti-syphilitic remedies. While syphilis as an etiologic factor in infantile paralysis occupies an important place, care should be taken not to put too much reliance upon such a diagnosis without more apparent corroborative evidences of the disease being present.

OBSTETRIC ASPECTS OF INFANTILE PARALYSIS.

Dr. C. E. Paddock—There are only two forms of paralytic affections occurring in childhood which are common; one of these is known as spastic infantile paralysis and the other as infantile paralysis or essential paralysis of children, or scientifically as antero-poliomyelitis. One lesion is in the brain, the other is in the cord. Of the cerebral palsy we have probably more to do in so-called birth palsies. Injury to the newborn during parturition with subsequent paralysis is more frequent than one is led to believe without referring to the literature upon the subject. Rupture of a blood vessel in the brain or the meninges in a child results from different causes, but in the obstetric sense by the application of some extraneous force. A contracted pelvis, protracted labor, or instrumental delivery is equivalent to a traumatic injury to the skull and brain, that is, the result is the same, leading to a hemorrhage, usually into the meninges. Protracted labor and not the forceps is the cause of greatest danger to the child's brain. First-born children are most apt to suffer, owing to the fact that first labors are, as a rule, harder and longer. Gowers found that in twenty-four cases of meningeal hemorrhage seventeen were first-born.

The apoplexy of the newborn is, according to Osler, McNutt and others, one of the chief causes of the bilateral hemiplegia or paraplegia occurring at birth. The fact that protracted labor is often the cause of paresis in the newborn is now generally acknowledged. Whatever may be the cause of the delay the head is being compressed upon in all its circumference, the vessels become engorged and a rupture of some of the smaller vessels of the meninges necessarily follows with their consequent result. What percentage of cases of paralysis in the newborn is the result of injury at birth I am unable to say, but I honestly believe that many cases which are referred to other causes are really birth palsies. We have been taught in former days to delay the use of the forceps until such a time as danger is imminent to either mother or child, and here is where a great mistake has been made when the labor has been so protracted that the heart indicates impending asphyxia; then, as rule, we are too late, for the child will either be born dead or born asphyxiated, resuscitated only to live a few days or a few weeks. One should not wait until such a time has arrived, but be able to know just the proper time to apply the forceps, and this can only be accomplished, unfortunately, through a great amount of clinic experience. The forceps is in the most skilled hand a dangerous instrument, but its dangers decrease with the skill which is acquired in its use. A student goes out into the world to practice never having applied the instrument, and in his ignorance he does an incalculable amount of mischief. The principal danger in the use of the forceps is in the high operations. Thanks to Tarnier, we have the axis-traction forceps, which has reduced the terrors of a forceps operation to one of extreme simplicity. The neglect in the treatment of breech presentation affords us many examples of infantile paralysis. The traction which is often resorted to to terminate a breech results in an injury to the cord with the subsequent poliomyelitis. Too much traction upon the over-congested cord and compression upon the after-coming head with hemorrhage at the base of the brain into the cavity of the arachnoid causes an effusion into the same cavity lower down, resulting in a spinal paralysis.

What is the treatment of these conditions? A more thorough knowledge of obstetrics is necessary. No branch of medicine requires such a thorough knowledge of medicine as obstetrics. Emergencies are continually arising which call for prompt action. Most any physician considers himself capable of conducting an obstetric case, and why? Because he has been taught that 96 per cent. of the cases terminate favorably. In this 96 per cent. however, cases of infantile paresis are not considered that can often be traced to his negligence. I have a fair idea of the operation for inguinal hernia, still I do not consider that I am justified in operating upon such a case; neither do I consider that every man simply because he has an M.D., to his name is justified in conducting an obstetric case. So soon as physicians realize that obstetrics is a science; that pro-

tracted labors are dangerous: that the forceps is an instrument of traction, not compression, so soon will the cases of infantile paresis due to mismanagement of obstetric cases be diminished.

CLINICAL ASPECTS OF INFANTILE PARALYSIS.

Dr. DANIEL R. BROWER—The clinic-aspects of the several forms of infantile paralysis are so familiar to every Fellow of this Academy, that I will not reiterate them on this occasion. I have here a series of photographs which I think will supplement very well the admirable paper and specimens presented by Dr. Engelmann. These photographs are those of a family of infantile cerebral palsies. The mother of these children is a very robust woman, who does her own work and takes care of these helpless children. She is 31 years old and never had a miscarriage. The parturitions of these several children were all normal. The father is 49 years of age, thin, and very anemic. He has been a painter since the age of 14; has had no attacks of lead colic or other evidence of lead poisoning; has no history of syphilis, but has had numerous attacks of malarial fever, and has some stigmata of degeneration. There are four children, all boys, three of them are diplegics, the other one is well with at least the ordinary intellectual and physical capacity of a boy of three and a half years. The three children show the classical symptoms of mental defect—rigidity, contracture, exaggeration of reflexes and clonus, choreic and athetoid movements, and a slight amount of atrophy. The oldest child is 10 years old. The two photographs, one front and the other back view, show the characteristic attitude of the disease. This child became diplegic at about two years. The next child is 5½ years old and became diplegic about the same time. The next child is 3½ years old and is well. The youngest child was 15 months old when this picture was taken about one year ago, and has since become diplegic. There has been no convulsion in any of the cases and the development of the paralytic symptoms has been gradual. I am watching the cases with great interest, hoping after a while to be able to unravel the mystery that thus rendered helpless three out of four children, the offspring of parentage fully equal to the average of their station.

EYE SYMPTOMS IN INFANTILE PARALYSIS.

Dr. WM. H. WILDER—There are so many conditions of the brain in children that may give rise to paralysis of the muscles of the eye or to paralysis of the optic nerve, if I may so term it, that one can only touch upon them briefly. I shall first speak of congenital defects of the muscles of the eye. We are all familiar with cases of ptosis in children, but we are not so familiar with congenital paralysis of one of the extrinsic muscles of the eye. A short time ago I presented such a case to the Chicago Medical Society, in which there was congenital paralysis of the external rectus. The girl was 22 years of age. There was no abductive power of the right eye, and this, according to the statements of the mother, had been the condition since birth. Such cases are rather infrequent. It can not be positively said however, that the paralysis is always due to some central lesion, such as defective growth of the nucleus. We have just as much right to assume that it is due to defective development of the muscle. Two cases are on record, reported by Seiler in which, on examination, he found absence of the superior rectus and the inferior oblique muscle of the right eye, and of the inferior oblique of the left eye. In the second case there was absence of both oblique muscles in the right eye, and in the left eye absence of both oblique muscles and the superior rectus. It is possible that the difficulty is due either to total absence or to defective development of the muscle. However, in most cases of congenital ptosis that we see there is probably some defective growth of the nuclei in the fourth ventricle that innervate these muscles. In other words, they should be considered nuclear palsies of congenital origin.

When we come to acquired infantile paralyses we reach a large field. Almost any disease that will bring about paralysis of the extrinsic or intrinsic muscles of the eye in adults may occasion it also in infants. Trauma may be the cause of paralysis of any of the muscles of the eyeball either directly or because of a blood clot pressing upon some of the nerves. A tumor in the orbit or immediately back of it would give a similar result.

One of the most common causes of paralysis of the ocular muscles in children is either pachymeningitis or leptomeningitis; and naturally we should expect such paralyses to be more frequent with inflammations affecting the meninges of the base of the brain than with those confined to the convexity. Consequently ocular paralysis is a common occurrence in tubercular meningitis, and may be one of the early signs of the same. The child may show a pronounced squint, and if old enough may complain of diplopia. This is not necessarily due to loss of power of any one muscle, but may be caused by a spastic contraction of one or more of them, a condition that may subsequently disappear. Pressure upon the nerves either by tubercle masses or exudate may be accountable for this, although in some cases the cause must lie in a neuritis set up by the irritation. The same cause may bring about partial or total loss of sight if the optic nerve become involved as it frequently does. But the physician should be cautious about attaching too much importance to amblyopia in a case of suspected meningeal or brain disease, for such amblyopia may be congenital or caused by a high refractive error, and only to be detected by a careful ophthalmoscopic examination or some other objective test. In children the chronic form of nuclear palsy of the ocular muscles is not so frequently seen as in adults, in whom syphilis so often acts to bring about the condition. Dr. Baum has correctly stated that congenital syphilis plays an insignificant rôle or no rôle at all in this disease. Hutchinson in his famous memoir does not cite a case of congenital syphilis having caused paralysis of the eye muscles in children and his opinion is also held by Mauthner and other observers. But closely allied to the nuclear palsy of adults is the condition described by Gowers by the name infantile oculo-facial palsy. To this class probably belong many of the cases of ptosis and paralysis of individual ocular muscles that are congenital or that appear in early life. In this condition there will be associated with palsy of one or more muscles of the eye a paralysis of one of the facial muscles or jaw muscles. There seems to be a peculiar connection in some persons between the center that innervates the levator palpebrarum and the center that innervates some of the muscles of the jaw. Cases are not altogether infrequent in which patients having a ptosis are unable to raise the lid unless they make a corresponding effort to open the mouth. It seems as if the impulse that is sent to the levator palpebrarum is, at the same time, sent to the depressors of the lower jaw. This would seem to explain why in some cases of oculo-facial paralysis we have a simultaneous or coincident paralysis of one of the maxillary muscles together with the muscles of the eyeball.

It is singular that in conditions of intra-cranial hemorrhage or spastic paraplegia of infants that we should not have more trouble on the part of the eye, because we have a blood clot in some cases pressing upon the convexity of the brain, sometimes reaching back and pressing upon the occipital lobe. Gowers mentions having seen but one case of complete blindness in such condition. Little mentions no eye symptoms in connection with it. Unless a clot should be on the occipital lobes and press upon the sight center, we should hardly expect any manifestation on part of the eye. We have in some febrile diseases serious disturbance of the ocular muscles. In diphtheria we are all familiar with the paralysis of accommodation that occurs, usually following the paralysis of the muscles of the palate. This may occur in connection with paralysis of some of the extrinsic ocular muscles. For instance, a case was reported in 1885 by Uhthoff in *Neurologisches Centralblatt*, in which there was complete external as well as internal ophthalmoplegia, and a short time after Mendel reported one very similar. In these cases we must suppose that some poison acts directly upon the centers in the fourth ventricle. In Mendel's case, which went to autopsy, there was found considerable congestion around the nuclei of the nerves, the capillaries were much ingested, and there was a tendency to softening of some of the nerve centers.

(To be continued.)

PRACTICAL NOTES.

Infection from Circumcision.—The *Semaine Médicale* describes a case of tuberculous infection of the testes in an otherwise healthy child of healthy Jewish parents. The infection was traced by a physician to the priest, who was found to be a confirmed consumptive, and who performed the rite of circumcision.

The Use of Dry Heat of High Temperature in the Treatment of Chronic Joint Affections.—Dr. Wirt's apparatus consists of a copper drum twelve inches long and nine inches in diameter, fitted at each end with a wooden ring and a hood of thick rubber. Having protected the back of the knee with cotton, it is enclosed in the apparatus and heat applied to the outside by means of a Bunsen burner. Most patients will tolerate a temperature between 250 degrees and 300 degrees F., provided

three holes were made in the drum to secure proper ventilation and keep the air dry. This treatment gives an immediate relief to pain and increases temporarily the mobility of the joint.—*St. Louis Med. Journal*, October.

Improved Method of Fastening Plaster Corsets.—Gendron recommends the use of strips of zinc, one mm. thick, three wide and as long as the corset. Two are cut at intervals of two cm. in oblong spaces across the strip, and the oblong piece cut out on three sides, but left connected by one of the small ends, and raised up like a trapdoor. An unperforated strip is placed on the median line of the thorax and the layers of the plaster bandage applied. On each side of this strip and at a distance of several centimeters the perforated strips are sunk in the plaster in the center of its thickness, the projecting raised pieces standing up out of the plaster. After the corset is thus applied, the projecting pieces are bent down to form hooks, which enable the corset to be laced up firm and tight.—*Semaine Méd.*, September 30.

Injection of Iodoform-camphorated Salol in Chancrous Bubo.—The *Gazette Méd. de Liège*, October 1, describes the prompt cicatrization of eighteen cases of chancrous bubo treated by a French army surgeon with an injection into its depths of $\frac{1}{3}$ to $\frac{2}{3}$ Pravaz syringe of 1-5 per cent. iodoform-camphorated salol. After the needle is withdrawn the hole should be stopped with the finger to prevent the escape of the fluid, and afterward painted with collodion. The incision is postponed until the following day, when all the gelatinous pus is forced out by pressure. A little mercurialized water at 1 to 1,000 helps to empty the pocket, which is then plugged with gauze dipped in the salol. The pus is removed again the next day and a second plug inserted. After this the bubo heals rapidly; the pain, swellings, etc., gradually disappear and the cicatrization proceeds regularly. The fifth day collodion is applied and the cure is complete by the eighth day, leaving a scarcely visible scar with the skin loose.

Diagnosis of the Possibility of Resuming Growth in Cases of Arrested Development.—Dr. Hertoghe of Antwerp, announces that growth can be resumed in all cases where the skeleton is not completely ossified, or as long as the bones retain their original cartilaginous character. He has been studying three classes of arrested or delayed development: Myxedema, hyperazoturia and rachitis, simultaneously with the administration of thyroidin. The most interesting part of his tests is that he diagnoses the cases first by means of radiography, which accurately determines the progress of ossification, and his diagnoses have been confirmed in every instance by the results of the treatment. In myxedema the ossification is tardy, and patients with this disease resume therefore their growth upon the administration of thyroidin. One of his cases was a young man of 27, who measured 1.37 meters in April, 1895, and has gained $1\frac{1}{3}$ inches (33 mm.) since then, and is still growing. The radiograph clearly showed in this case the distinct light zones in the phalanges, revealing thus their incomplete ossification and the possibility of a resumption of growth in spite of his advanced age. Cases of hyperazoturia also present a marked lack of ossification, and therefore are able to resume growing; but in rachitis, on the contrary, the bones ossify very early and no further growth is to be expected.—*Semaine Méd.*, September 30.

Treatment of Yellow Fever.—The editor of the *Tribuna Médica* of Rio de Janeiro, No. 10, announces that he has found that the tincture of eucalyptus, administered promptly and in large quantities, has a marked effect in attenuating the severer symptoms of yellow fever. He reports thirty-one cases treated with it, and only three deaths, which were each probably due to the ignorant and careless attendance the cases received. Very large doses can be borne, as much as 30 to 40 grams in twenty-four hours, with frequent enemas of 30 grams in a liter of water. It seems to have an especially powerful effect on the kidneys, and prevents the usual anuria. *O Brazil Médico* of August 1, also states that it has been the experience of Da Costa, who has been at the head of a hospital in Brazil for twenty-four years, that few if any cases of yellow fever were fatal that were accompanied by suppurated parotitis. The suggestion is made that this might be produced artificially, and Fochier produces abscesses with turpentine, to prevent or modify purulent transformation of pneumonic exudates.

The Dangers of the Operative Treatment of Enlarged Prostate.—Dumstrey, in *Centralblatt für Chirurgie*, records a case of enlarged prostate treated by ligature and resection of the vas deferens, which shows that this operation can not be regarded as a simple one and free from risk. A man, aged 65, in all other respects strong and healthy, came under the author's care with complete urinary retention and severe cystitis due to considerable prostatic enlargement. Partial resection of the vas deferens on both sides was followed in the course of a few days by decided relief of the local symptoms, the man being able to pass urine spontaneously and the urine becoming much less turbid and containing day by day less pus and blood. The prostate, which just before the operation had been as large as a fist, was reduced in size by about one-half. These good results, however, were associated with serious impairment of both the physical strength and the mental condition of the patient. He speedily presented the appearance of a very old and feeble person. His movements became slow and clumsy, and he was unable to comprehend what was said to him and also to express his own thoughts. After an interval of about a fortnight his condition commenced to improve, but the change for the better was very slow and gradual.

Location of Foreign Bodies in the Eye with Roentgen Rays.—Dr. Clark, Columbus, reported at the recent meeting of the American Ophthalmological Society at New London, a case in which the presence of a small fragment of metal in the extreme angle of the anterior chamber and the iris, where it could not be seen, had been determined by radiography. The sensitive plate had been introduced into the adjoining nostril, the patient being put under ether, and the rays directed upon it through the eye from the temporal side. He also suggested that the plate could be placed in the cocainized conjunctival sac, or an opening could be made in the conjunctiva and the small plate slipped behind it. He believed that this method of locating a foreign body in the eyeball was perfectly practicable, especially if the particle were lodged anteriorly, as in the ciliary region, where it could not be seen with the ophthalmoscope. Dr. Williams, Boston, reported a case in which a fragment of the copper case of a cartridge had passed through the cornea and lens. Nothing could be seen of it and it was not certain that it was in the eye. The use of the X rays showed the presence of the fragment, and it was removed. The radiograph was obtained with ten minutes' exposure by laying the patient's head with the side of the injured eye upon the plate, and placing the Crookes' tube above and rather in front of the patient's head.—*Ophthalmic Review*, August.

Chronic Membranous Bronchitis.—Claisse says that the nature of chronic membranous bronchitis has been but little studied, and gives the results of a bacteriologic examination of the membrane from a patient who had expectorated bronchial casts for several years. Cultures showed an inconstant and small number of staphylococci and various forms of bacilli, but the only microörganisms found in abundance and in all tubes which did not prove sterile, were streptococci. Cut sections showed the presence of various microbes on the surface of the false membrane, probably through contamination by the saliva, but in its center only streptococci were met with. Fragments of the membrane introduced into the bronchi of

animals or beneath their skin, produced practically no reaction, while inoculation experiments made with cultures of the germs were equally negative, yet, in spite of their lack of virulence, their constant presence shows that they were not a mere accidental coincidence, but that the disease was due to a chronic infection by them. Anti-streptococcic serum was tried with apparent success, the patient leaving the hospital in better condition than she had been for years.—*Boston Med. Journal*, October 8; from *Comp. Rend. Soc. de Biologie*, April 3.

Intra-cervical Injection of Glycerin; a Modification of Pelzer's Method of Inducing Premature Labor.—Helme improves on Pelzer's intra-uterine injections by introducing the nozzle of the syringe into the cervix alone, and describes with enthusiasm in the *Lancet* of October 3, the success of this treatment in two cases. The important points are: 1, that the intra-cervical injection of glycerin produces a rapid and progressive dilatation of the cervical canal; 2, that at the same time the lower pole of the ovum becomes detached from the lower uterine segment; 3, that the intra-uterine injection of glycerin between the detached portion of the membranes and the uterine wall may be carried out without fear of puncturing the membranes or of interfering with the placental attachment: and 4, that labor is effectually induced. As to the manner in which glycerin acts Pelzer offers the three following suggestions: 1, it acts as a direct irritant of the uterine surface, setting up muscular contractions; 2, it acts through a mechanical separation of the membranes; and 3, its hygroscopic action causes a transudation of the liquor amnii; the ovum becomes smaller and is detached from the uterine wall; there is at the same time a contraction of the uterus upon its diminished contents. But in addition to this power of setting up uterine contraction careful observation shows that glycerin possesses the power of causing dilatation of the cervical canal before contractions of the uterus, which are appreciable to the patient or the physician, are set up. The injection of pure glycerin into the cervical canal is followed by immediate softening and relaxation of the cervical tissues with dilatation of the cervical canal, and this result seems to be too rapid to be the result of muscular action. In one case of rachitic pelvis, four injections of 1½ ounces glycerin were made in eight hours with a fifth of three ounces the next morning. Labor was shorter and recovery more rapid than ever before.

Surgical Treatment of Tuberculosis of the Bladder.—Greiffenhagen describes in the *D. Zts. f. Chir.* 3, a case of tumefaction of the bladder in a man of 47, whose urine contained blood and numerous Koch bacilli. There was great pain and emaciation, with incontinence of the urine. Clinical examination showed a tumor the size of a nut, a little above the symphysis pubis, which ascended or descended according to the quantity of urine in the bladder. A similar tumor was situated also on the anterior surface of the bladder, and the external orifice of the urethra was also the seat of another, the size of a cherry. There was also a hard swelling in the membranous part of the urethra. The prostate was large but not painful, while the lower part of the bladder was intensely painful to pressure. After several weeks of creosote medication—local treatment being impossible on account of the sensitiveness of the patient and the smallness of the urethra—a vast tumefaction formed in the perineal region, combined with complete retention of urine, which demanded surgical intervention. After opening the abdomen on the median line, a multitude of small cavities were encountered, filled with a cheesy pus, and communicating with the urethra. An opening was made into the fundus of the bladder and a large drainage tube inserted, after which the peri-urethral abscesses were curetted out and iodoform gauze applied. Five weeks after the operation the Koch bacilli had entirely disappeared from the urine. A permanent catheter was introduced into the urethra after dilation. The perineal wound healed; the tumors in the vesical wall and at the orifice of the urethra retroceded, and the general health continued to improve. A year has passed since of perfect health for the patient, a farmer, who has pursued his usual occupations. Greiffenhagen adds that such cases should more frequently be handed over to the surgeon, whenever instillations of sublimate and injections of iodoform fail to relieve.—*Sem. Méd.*, September 30.

Serum Diagnosis of Typhoid Fever.—It has been shown by Pfeiffer of Berlin, and Widal of Paris, that the serum obtained from the blood of a patient suffering from typhoid fever is capable of so acting upon pure bouillon cultures of the typhoid bacillus mixed with it as to abolish the active motion characteristic of that organism in fluid culture media and cause an agglutination of the individual bacilli into large groups or clumps. This change is easily recognizable under the microscope, or in culture tubes, and usually occurs within a few minutes. It has since been shown by Dr. Wyatt Johnston, bacteriologist of the Provincial Board of Health of Ontario, that the fluid obtained by moistening with water a dried blood drop gives the reaction in a prompt and satisfactory manner, even after it has been dried for several days. This modification of the process makes it suitable for a system of free public laboratory diagnosis, similar to that in the case of diphtheria, as a drop of dried blood can be readily sent to a laboratory for examination. Dr. Johnston was able to diagnose the presence or absence of the disease correctly by means of dried blood drops sent by mail from Montreal, Canada, to Buffalo, N. Y., during the recent meeting of the American Public Health Association. To test the practical utility of the method the Board of Health of Ontario has issued a circular in which it offers to examine and report upon any samples of blood sent by physicians of the province. The blood is to be taken from the finger tip or lobe of the ear, after thorough cleansing of the skin, by pricking with a needle previously sterilized by heating over a lamp or gas flame. The drop is to be absorbed by a piece of sterilized paper which is furnished in an envelope by the board, with directions for its return. A report is promised by 2 P.M. of the day following that on which the sample is received and will be communicated by telephone when the number is given. By this systematic investigation the board wishes and expects to obtain data on, 1, the proportion of cases in which a correct diagnosis can be made by the serum test, and the relative efficiency of the method of employing dried samples; 2, the earliest period in typhoid fever at which this method can be expected to give indications; 3, the length of time for which it persists after convalescence; 4, the existence of any relation between the intensity of the reaction with the test and the course of the disease; 5, the study of the nature of the obscure febrile conditions, clinically termed gastric fever, continued fever, abortive typhoid, bilious fever, typho-malarial fever, etc., about which our present knowledge is very meager and unsatisfactory. The board is especially desirious of hearing promptly of and re-examining any genuine typhoid cases in which the method is not successful. In case of negative results, it is desired that after a few days an additional sample should also be sent consisting of a few drops of blood collected in a glass tube which will be furnished on application. With reference to the effect of drying the samples it is observed that while this may lessen slightly the delicacy of the reaction it has the practical advantage of obviating a serious source of error, namely the contamination of the sample and the subsequent growth of putrefactive bacteria. This is of special importance in the care of samples having to be sent long distances. No doubt other boards of health will take up this subject and aid in the advance of our knowledge of typhoid fever and other febrile conditions.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance $5.00
Single Copies . . . . . 10 Cents.

Subscriptions may begin at any time and be sent to

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 61 Market Street (Occidental Buildings), Chicago, Illinois.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, Venetian Building, Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 61 Market Street (Occidental Buildings), Chicago.

Original communications are only received with the understanding that they are exclusively contributed to this JOURNAL.

INFORMATION WANTED.

It would greatly facilitate the prompt delivery of the JOURNAL to those members of the ASSOCIATION living in large cities, if they would kindly furnish this office with their street address in those cases where it is omitted from the wrapper of their JOURNAL, as we have been notified by the postmasters of the larger cities that second-class mail matter not having street address, would be placed in the general delivery to await call.

SATURDAY, OCTOBER 31, 1896.

PHYSIOLOGIC TREATMENT OF NEURASTHENIA.

Dr. DAVID RIESMAN, of Philadelphia, closes up a well considered article on neurasthenia in the *University Medical Magazine*, September, by a scheme of treatment that embraces medicinal, hygienic and dietetic recommendations.

1. Medicinal treatment can not be a matter of routine, but there are few remedies that are of benefit in a large number of cases.

At the head stand the bromids, of which he generally employs the sodium or potassium salt in doses of fifteen grains two or three times a day; strontium bromid, in thirty grain doses, has also given good results, particularly in lithemic cases.

The coal tar products, either alone or combined with the bromids, are often of value. A remedy, for which much has been claimed but which he has not used, is spermin. The animal extracts have been employed, but it is questionable whether the results achieved are not due to suggestion.

Special conditions will naturally demand a modification of our treatment. Insomnia needs often to be combated; frequently a hot sponge-bath before retiring, or the application of hot towels to the face, is sufficient to encourage sleep. When drugs must be employed, we resort to bromids, sulphonal, trional or hyoscin; never, if possible, to morphin. Marked lithemic conditions are corrected by the use of alkaline mineral waters, the lithia salts, or by piperazin and its congeners.

In nervous dyspepsia, in addition to regulation of diet, suitable remedies may be administered. The mineral acids are of value in some cases; antiseptics and sedatives, such as bismuth subgallate, in others. The constipation is treated by the customary methods.

2. Dietetics.—The diet in neurasthenia should be nutritious; it has no special limitations except when the rest-cure is employed or when distinct indications are present. The patient's idiosyncrasies must be considered. If anemia exists, beef, eggs and milk are given in abundance; in lithemic cases the meats are restricted, and alcoholic beverages as well as rich articles of food are excluded from the dietary.

For nearly all cases coffee and tea seem to be harmful, and he has been in the habit, perhaps with too strict an adherence to routine, of always forbidding their use.

If symptoms of nervous dyspepsia are present, the sugars and starches should be as much as possible eliminated from the diet; the patients often do well when placed on rare meat, stale bread or gluten bread and milk. Milk is especially valuable in cases suffering from gastralgic attacks.

3. Among hygienic measures the most important is rest; prolonged rest is to the neurasthenic patient what the nightly sleep is to the healthy man. In severe cases it is necessary to adopt the so-called rest cure, or Weir Mitchell treatment, consisting of rest in bed, massage, electricity and liberal feeding. This may bring about a cure in an apparently hopeless case. During the rest cure the patient is not permitted to see his or her friends, is not allowed to read, and is in constant charge of an intelligent, strong-minded nurse.

As important as any of the measures adopted, indeed, deserving to be ranked the foremost factor in treatment, is the personality of the physician. In no disease is it so essential to inspire the patient with confidence, and in none is so much good accomplished by suggestion alone as in neurasthenia. The physician should listen patiently to the almost interminable recital of fanciful ailments, and should always make a careful physical examination to exclude all possibility of lurking organic disease.

If the rest-cure is impossible or not indicated, the patient must take a definite amount of rest by lying down for an hour or two in the morning and in the afternoon—this is especially valuable in women.

Bathing is not to be neglected. The bath should be of short duration and should be followed by a cold shower bath or cold douche, with friction. In the so-called sexual neurasthenia, the application of cold water to the spine and the perineum acts as a powerful sedative.

A change of climate, such as a sojourn at the seashore, in a retired spot, or a sea voyage of some length, is valuable in many instances.

In neurasthenia with disturbances of the sexual functions a combination of bromids and hyoscin is very useful. The patient should also be instructed to sleep on his side (this may be accomplished by having him bind a cigar box on the back, or by tying a towel about the waist with the knot behind), and to apply cold douches to the spine and perineum. For this class of cases outdoor exercise is very valuable.

WATER SUPPLY OF DENVER AND CHICAGO.

An increase of typhoid fever deaths in the city of Denver, amounting to nearly 35 per cent. in September last over the average for the previous three months as compared with the usual seasonal increase of less than 12 per cent., has been made the occasion of an exhaustive study of the water supply of that city by its accomplished commissioner of health, Dr. WILLIAM P. MUNN. His preliminary report to Mayor MCMURRAY on "The pollution of certain sources of the water supply of the city," and his comments thereon, will be a revelation to other commissioners of health and to other mayors of cities.

Dr. MUNN seriously proposes that the water from all sources of the Denver water supply shall be pure and healthful, even if it be necessary that they be passed through "properly constructed and efficient filters, which shall give an effluent having an average at all times of less than 100 germs per cubic centimeter," and that "if any of the patented processes are adopted for the removal of impurities by mechanical or chemical methods, it shall be a condition that a month's test shall show an effluent at all times containing less than 100 bacteria per cubic centimeter, and that the test shall be carried on with the waters of the proposed supply, and that the proposed filter shall be approved by the mayor and the health commissioner, and the tests supervised and accepted by them as satisfactory."

There are communities far more pretentious than Denver—one of them has the honor of being the home office of the JOURNAL—where the permissible limit of the bacteria is ten times this number, and where the records show more than seventy times this number as an actual average.

In his report Dr. MUNN shows, as has been shown by others, that typhoid fever prevalence follows the pollution of the water supply, that it subsides with the improvement of the supply, and that "the great bulk of cases of typhoid fever in all epidemics is due to the one common cause—an infected water supply." He adds: "When the probable sources of that infection are discovered, it is the plain duty of those upon whom the responsibility lies to suggest the remedies. Failure to adopt the remedial measures that are necessary means deliberate acceptance of responsibility for the resultant loss of human life."

The JOURNAL begs to commend this utterance, which will be endorsed by every sanitarian in the country, to the prayerful consideration of the civic and educational authorities of the city of Chicago, where the death rate from typhoid fever is again becoming the highest in the world.

TABLET MEDICATION.

The "tablet fad," as some of our pharmaceutic friends choose to call it, appears to have come to stay. The convenience, cleanliness and presumably accurate dosage of the preparations recommend them readily to the practitioner, and at the present time there is hardly a doctor's office where the familiar glass stoppered bottles and labels of the different manufacturers are not to be encountered. They have undoubtedly affected the druggists' business to some extent, and have perhaps also modified medical practice; how materially is a question to be settled in the future. That they are the unmitigated evil that some pharmaceutic writers hold, is doubtful; but that their extensive adoption as a mode of drug-dispensing by physicians has in it possibilities to be deprecated, is pretty nearly certain. In their present development, it may easily happen that with some they may induce an indolent or careless therapeutic method—that ready made shotgun prescriptions may become popular and an actual evil. It is easy also to see how, without any standard authority regulating these preparations, there may be some among them that are not only useless but absolutely dangerous combinations introduced to manufacturers and sent out among the profession. It may be there are none as yet of this kind that are really of any importance, but we have to reckon with their possibility. Certainly there are some among them that are ineffective or uncertain.

All the objections to these tablets could, it would seem, be avoided if there were a standard list, made up mainly of simple drugs, a few well tried or rational combinations perhaps included, which could be prescribed if so desired and supplied by every druggist, and which could be combined according to the needs of any special prescription if the physician desired to dispense his own medicine. A very large proportion of the pharmacopeia is made up of substances that can very readily be made up into these tablets, the convenience of which is now being daily demonstrated. Others that are not thus suitable, but which are now included in the manufacturers' lists, would of course be omitted from the standard list and it would in this way save both physician and patient from being misled into trouble and expense. The addition of a class of compressed tablets and tablet triturates to the regular pharmacopeia would not hurt any business more than is being done at present, and would regulate what is at present a somewhat irregular, but widespread and popular method of medication and one that has its real advantages and merits.

THE NEW YORK STATE MEDICAL ASSOCIATION.

Thirteen years ago the New York State Medical Society separated on the code question. Those who believed in the code of the National Society began to hold their annual meetings in New York City, and were designated as the New York State Medical Association. The State was divided into five districts, presided over by vice-presidents, and holding quarterly and semi-annual meetings. The regular annual meeting of the Association, at the Mott Memorial Hall, New York City, was held October 13, 14 and 15, and was of more than usual interest. The President's address on "Medical Expert Testimony," was a suggestive, thoughtful study of the subject by Dr. DARWIN COLVIN of Clyde, N. Y., one of the few living original members of the AMERICAN MEDICAL ASSOCIATION. Dr. AUSTIN FLINT of New York in a special report on criminology dwelt on the injustice of the law forced through the legislature by the labor unions, taking all contract labor from the prisons, leaving the prisoners in idleness and increasing the cost to the State. A symposium on prostatic enlargement and its surgical and medical treatment brought out a very interesting discussion. Among the large number of important papers was one by Dr. E. D. FERGUSON, on "Fatal Cases Presumably Due to Intestinal Ptomains," which gave a new meaning to a class of obscure symptoms, and suggested a new field of study that promises brilliant discoveries in the near future. The address on surgery by Dr. PHELPS of New York City, was an exceptionally clear philosophic critique of the general progress of surgery and medicine; also a plea for higher ideals of professional life and living. Dr. SAYRE'S paper "On the Practical Uses of Roentgen's Discovery as Applied to Surgery," illustrated, was of great interest. The program as a whole was very significant of a great evolution in the practice of medicine. Of the forty-five papers and addresses offered, over thirty were devoted to surgery. Many of them were reports and discussions of very formidable operations, mostly by physicians living away from the large cities and centers of learning, and doing a general practice.

The post-graduate schools are clearly doing a revolutionary work in preparing the general practitioner for surgical operations which were formerly only done by leaders in the profession and at large hospitals. Evidently a decided evolution is building up surgeons in inland towns and villages, competent for ordinary demands of modern surgery. This, however, may go too far, as that manual dexterity resulting from daily practice required in certain exceptional operations can only be acquired in the large hospitals. While undoubtedly surgery is one of the fascinating branches of modern medicine, and at present outranks all others in prominence, yet the topics of papers seen in programs of medical meetings, indicate many and probably far more important fields of study. The New York State Medical Association is one of the prominent Eastern societies, whose membership includes many of the leading medical men of the country and whose published transactions are eagerly sought after as representing the advanced studies of medicine.

Yet all medical societies' meetings suffer from the inability of readers of papers to condense and give the listeners the conclusions of their studies only. In an annual meeting of several days' duration, outside the addresses on general and special topics, the readers of papers should be limited to conclusions and summaries of their arguments, leaving to the printed page the facts and observations which can be studied at leisure. Often readers of good papers fail to rouse up any interest by faults of tone and address. Many authors appear at their best in print, and should never read their productions. Others are best in impromptu debate and exchange of opinion.

The model medical meeting is yet to come, but there are signs of its near approach every year.

THE COOK COUNTY (ILLINOIS) HOSPITAL.

The Practitioners' Club of Chicago held a meeting Monday night, under the presidency of Prof. CHRISTIAN FENGER, at which they discussed the perennial Cook County Hospital question. The speakers were Drs. STEELE, BABCOCK, T. A. DAVIS, SENN, W. T. MONTGOMERY, BROWER, HAMILTON, MOYER, LEWIS and WILDER. Some curious facts were brought out in the discussion, among others that the members of the staff, with very few exceptions, were the private physicians of the county commissioners, and that the price of appointment was free treatment of the special commissioner and his family, together with the political pull of the incumbent. One of the speakers stated that internes at that institution were in the habit of performing capital operations in emergency cases without waiting for an attending member of the staff, and that they did not hesitate to perform such dangerous operations as amputation of the hip joint. Statement was made that no provision for bedside instruction was at present made at the hospital, and that it was optional with the patients whether or not they were admitted to the clinic amphitheater. One of the members of the staff, while speaking in a manner entirely friendly to the management, asserted that cases of phthisis pulmonalis, even in an advanced stage, were frequently placed in beds alongside of cases of typhoid fever, pneumonia or bronchitis, and that no separation of these cases was even attempted; that the temperature of the wards was very badly managed, and as a rule kept entirely too high, and remonstrances on the part of the staff were of no particular avail, as the institution is under the management of a lay "Warden," responsible alone to the county commissioners.

These defects in the largest hospital of Chicago are not creditable to the public, and the necessity for putting the hospital under medical rather than lay supervision has again been demonstrated.

At the same meeting a motion to recommend the commissioners to abolish the hospital ticket fee for students was voted down on the statement of Dr. T. A. DAVIS that this money was used for laboratory purposes. Resolution was finally passed inviting the coöperation of the Chicago Medical and other regular societies of the city, to take immediate action this week, *before the election*, recommending that hereafter the regular members of the hospital staff be appointed on the recommendation of the Chicago Medical Society.

GETTING RICH "BY DEGREES" IN ITALY.

The Rome correspondent of the London *Lancet*, September 19, records the fact that three years ago the sale of bogus degrees had reached proportions in Bologna which incurred the intervention of the police, and their manufacturer is still, it is believed, serving his time in one of the local prisons. But the summary example made of him has not, it would appear, proved much of a deterrent. At least, from information gathered in Italy the industry is still a paying one, if the number of graduates whose scholastic record is rather dim may be received as a test. This time the University which confers the diplomas is not Bologna, but Berne, whose *sigillum magnum* was stolen, or in some way got at, so as to be counterfeited to perfection. The alleged thief or forger has been arrested, but the article was not found in his possession and is still to seek. So the world is not yet safe against the illicit creation of graduates, medical and other, but chiefly medical, of whom, it seems, there are already nearly three hundred vaunting themselves alumni of the leading Swiss University. Scandinavia and Germany boast the majority of such graduates, while there are some fifty or so practicing in or on the English-speaking public in both hemispheres. The rest are chiefly to be found in Italy, Austria and the East.

CORRESPONDENCE.

Glandular Interdependence.

CHICAGO, Sept. 25, 1896.

To the Editor:—In an editorial on "The Vital and Psychic Complications in Castration for Prostatic Hypertrophy" which appeared in the JOURNAL of Saturday September 19, the writer in speaking of the testicles, observes "that these organs are absolutely without function at an advanced age is most certainly untrue for many individuals. . . . There is probably a germ of truth in the theory of Brown-Séquard as to the invigorating influence of the testicular secretion; certainly the experimenters in organo-therapy have not lost faith in it altogether. The organs do not atrophy completely even after their special sexual function has apparently long been lost, and it is only reasonable to assume that they still have some utility in the organism." This is perfectly true. I think we may safely infer that no organ of the body performs but one function and that alone. The several tissues, using lymph as a medium live upon the blood, taking up from the blood the materials for, and returning to the blood the products of, their metabolism. Therefore, the supply of blood that is not only deficient in quantity but defective in quality, is one of the causes of nutritive derangement. And another cause is the failure of the organism to eliminate the waste products which accumulate in the blood. But yet a third cause of defective nutrition is the alteration of the blood which consists in the interdependence of each and every tissue of the body upon one another, and hence no part can either be removed or remain inactive without producing an ill-effect upon the rest of the body. Foster expresses himself on this subject in the following words: "Changes in one organ may affect the condition of other distant organs by changes induced in the composition or qualities of the blood." And again: "The products of the metabolism of one organ are carried to other organs for further elaboration and possible utilization." Take, for instance, the liver. We know from Minkowski's experiments on birds, and from the experiments of Hahn, Masson, Pawlow, Nencki and others, on dogs that the extirpation of the liver in the former is attended with the replacement of uric acid by ammonia and lactic acid, and the ligation of the hepatic artery in the latter replaced uric acid by the carbonate of ammonia. These experiments go to show that the liver protects the organism from poisoning by the products of its own cellular activity. And Bouchard has demonstrated that this function of the liver diminishes in an enormous degree the toxicity of the waste products.

Take next the pancreas. It has been conclusively proved by the experiments of Von Mering, Minkowski, Lancereaux, Gley and others that besides its digestive functions the pancreas subserves the important purpose of utilizing the glucose that is normally present in the blood. Extirpate the organ or tie all its veins and we have glycosuria or pancreatic diabetes as an immediate result. Forty years ago Schiff demonstrated the troubles and alterations of nutrition following the extirpation of the thyroid. He then believed that this body elaborated something which had an important effect on the nutrition of the nervous system. This has since been verified classically in myxedema.

From Gley's experiments on the rabbit we come to find now that acromegaly, that peculiar hypertrophy, is associated with disease of the pituitary body. From the studies of Addison and the experiments of Brown-Séquard, Langlois, and recently of Schaefer and Oliver, we have arrived at the conclusion that the medullary portion of the suprarenal capsules secretes something which increases the tone of all muscular tissue, especially of the heart and arteries. Indeed, even the kidneys perform other functions besides that of eliminating waste products. Bradford's experiments conclusively demonstrate the fact that the renal organs possess and perform another function, viz., the metabolism of the tissues.

It is more than probable, therefore, that the testicles also have functions besides those intended for procreative purposes. Testicular preparations may, therefore, reasonably be assumed to possess useful properties. That they actually do influence the general nutrition will be readily admitted by the results obtained in the following case:

L. M., age 62, an Englishman by birth, has for thirty-eight years been a sufferer from psoriasis. When examined in June, 1896, was found to be pretty nearly hide-bound by a thick layer of silvery scales from his head, forehead and neck, down his front and back, his arms, nates and legs to the palms of his hands and soles of his feet. His nails looked "worm-eaten," and the bends of his elbows and knees were cracked and bleeding. In his travels in Europe he had consulted every

dermatologist of any name and had tried every known remedy recommended by Startin, Tilbury Fox, Hebra, Unna, Kaposi and others. He had tried hydropathic treatment for two years; every description of sulphur treatment from simple sulphur to all kinds of sulphur preparations, including ichthyol and resorcin, with sulphur and mud baths for another two years; had been pitched and tarred within and without for another two years; the thrysophanic acid, chrysarobin, ararobin, mercury, iodin, pilocarpin and arsenic treatments for yet another two years; hot vapor baths, pure and medicated with salicylates, colchicum, potash soda and lithia, with all manner of diaphoretics, diuretics and purgatives for an indefinite period. But it was of no use; the disease persisted and latterly he had ceased all treatment and was resigned to the inevitable.

He was given a bottle of phospho-albumin, a very palatable testicular preparation, made in Chicago, and he was advised to discontinue all external applications, and to avoid the use of water. He took a tablespoonful three times a day after each meal, and he felt encouraged to continue the treatment until he had taken three bottles of it, when he was again examined.

Now it was approximately estimated that this skin trouble covered about $2^1/_2$ square feet of the surface of his body and I have to report the remarkable fact that after taking his third bottle of phospho-albumin there was not a speck of the psoriasis to be seen. Over the diseased patches were now visible dark chocolate-brown stains, but of perfectly velvety smoothness without the least irritation or pruritus. This is not the first or only case of psoriasis cured by testicular preparations. Bouffe reports good results from Brown-Séquard's fluid in this obstinate disease (*Press Med. Belge*, 1894, No. 35). I have another case of seveteen years' standing now under this treatment, but not enough time has yet elapsed to allow of any opinion being expressed as to its effects. It is just possible this treatment may not succeed in the next case, for we do not know what the something is that produced the results and, hence, we are as yet ignorant as to the exact indications for its use. In the next place we are ignorant of the causes which produce psoriasis. When found in conjunction with syphilis specific treatment is beneficial; when it flourishes on a rheumatic or gouty soil the salicylates, colchicum and alkalies help to alleviate the urgency of the symptoms, but when it is "idiopathic" (a term which expresses our ignorance of etiology) and seems to be nothing more or less than a surface manifestation of some general nutritive derangement, then phospho-albumin gives results that are simply marvelous. The glandular bodies should be studied in the laboratory as to their physiologic chemistry and histology, and these studies combined with experimental physiology and empirical therapeutics might lead to great revelations. M. H. Lackersteen, M.D.

The Proposed Leprosy Congress.

New York, Oct. 19, 1896.

To the Editor:—I enclose some copies of letters relating to the proposed leprosy congress. The first idea was to hold it in Bergen, Norway, out of compliment to Hansen. The latter has now renounced his personal claims, and the opinions are now divided between London and Moscow. As you will see, we were happy enough to secure the interest of Queen Victoria, and we have a well grounded hope that the British government will take an active part in the enterprise. Dr. Hutchinson thinks that the Prince of Wales will almost to a certainty consent to act as president of the Congress if held in London. As the British empire is more interested than any other country in the question of leprosy, it seems but natural, especially with these great advantages, that London should be chosen. Dr. Morrow, who is the committee appointed by the American Dermatological Association to represent it in the matter of the Congress, and who was given full powers to act, votes for Bergen first, London second, as the seat of the Congress, and thinks that the most successful meeting could be obtained for London if our Congress meets shortly before or after the Moscow General Congress. I myself shall vote for London. Will you kindly favor us with an editorial voicing these sentiments, and greatly oblige, Very truly yours,

Albert S. Ashmead, M.D.

London, Sept. 22, 1896.

Dr. Albert Ashmead.—*Dear Sir:* At the Ambassador's request I have much pleasure in enclosing herewith the answer from Sir Arthur Bigge to your letter addressed to the Queen. I am, dear sir, your obedient servant,

John Ridgely Carter, Secretary to U.S. Ambassador.

Balmoral Castle, Sept. 21, 1896.

Dr. Albert Ashmead.—*Dear Sir:* In reply to your letter addressed to the Queen and forwarded through the embassy of the United States in London, I have the honor to inform you that your communication has been duly laid before Her Majesty, who is interested in hearing of the proposed International Congress for the suppression and prevention of leprosy. Your letter has now been forwarded to the Queen's ministers, in order that the question may be considered and dealt with by those who in all such matters must be Her Majesty's responsible advisers. I have the honor to be, dear sir, yours very faithfully,

Arthur Bigge, Private Secretary to the Queen.

London, Sept. 16, 1896.

Dr. Albert S. Ashmead.—*My Dear Sir:* I warmly approvs your scheme and vote with both hands for Bergen. It would be a mistake to make it a part of the Moscow congress. If in Bergen and well ahead of the Moscow meeting, so that those who wished could attend both, it would, I think, be well attended. For myself I might hope to get to Bergen, but scarcely to Moscow.

I do not think that I much approve the idea of collecting money for leper-houses. What we have as medical and scientific men to do is to find out the cause and the means of prevention, and we should need all the money we can obtain for researches. In the administration of the "Prince of Wales fund" we felt it to be a mistake to have undertaken aid to asylums. It wasted our funds and did an infinitesimal amount of good.

If you thought well to compromise and meet in London, I do not doubt that the Prince of Wales would consent to be president. If you appoint patrons he would probably give his name to the Bergen list.

Why not include "Yaws," or why not make it "For the Study of widely spread Endemic Diseases, Especially Leprosy and Yaws." It might still take its colloquial name from leprosy. Wishing you success, I am, yours sincerely,

Jonathan Hutchinson.

Tokyo, Japan, Sept. 2, 1896.

Dr. Ashmead.—*My Dear Doctor:* I am directed to acknowledge with thanks the receipt of your favor dated New York, Aug. 5, 1896, and beg leave to reply that Prof. Kitasato is highly delighted to hear of your project, and that he will be glad to do all in his power to further the interests of the Congress. He is making researches on the subject you mention, and if they are completed at the time the Congress meets it will afford him much pleasure to report them. He sends his best regards. Yours very truly,

A. Nakagawa, M.D.
Assistant in Institut für Infections-krankheiten.

Bogota, Columbia, Sept. 12, 1896.

Dr. Albert S. Ashmead.—*Dear Sir:* I have had the honor to receive your favor of August 5 of this year, in which you do me the honor to inform me that in the coming year there will be held in Bergen a Congress of Leprologists, to which you do me the honorable distinction to invite me; and at the same time my own interest prompts me to interest myself with the government of my own country to make it accept the invitation which you address to that government, to take its place in the said congress, and to send to it an official delegate. As for me, I accept with the greatest of pleasure, my dear sir, such a signal show of appreciation, and I shall take my place in the Congress unless some unforeseen accident prevents me. Should such an accident happen, you may be sure of the serotherapy exposition you desire, for which I have already in my hands, and I shall receive more, materials to serve as clinical observations, photographs of diseased people, statistic and

historic information, and a lot of things which seem to me to interest the eminent leprologists who will meet at the Congress.

Since I have received your letter I have addressed myself to the Minister of Foreign Relations, in order to satisfy the recommendation made by you, and he told me that he had not yet received the communication which you declare having sent him through the American Minister. But he thinks that he may assure you that the government will accept the invitation and that it will send an official commissioner, as you have asked him.

And now will you allow me to ask you one question? I should like to know that Dr. Hansen will experiment on some case of leprosy of the Hospital Luugaarde with serum-therapy treatment which a year ago I have tried here, with good result, in order that when the Congress of Bergen shall meet, the distinguished scholar will be able to pronounce his idea according to that treatment. For that effect, I remit to you some copies of my third communication to the Academy of Bogota in which there are to be found all the details necessary to the propagation of the anti-leprous serum, and for the treatment of the patients by that method. Hoping for the kindness of yourself, that you will forward this paper to Dr. Hansen. If he wants to make the experiments, without taking to himself the trouble of making the serum, you will do me the favor to let me know, that I could send from here the serum which will be necessary for him.

With the feeling of the most distinguished considerations, I have the honor to declare myself your most attentive and sure servitor, JUAN DE DIOS CARRASQUILLA, L.

COPENHAGEN, Sept. 18, 1896.

Dr. ALBERT ASHMEAD.—*Dear Sir:* I have had great pleasure in receiving to-day your letter, because I am working on the same subject since last year. At the last congress in London in August, 1896, I spoke with the most renowned European leprologists of this matter, and they were all together of the unanimous opinion that a league against leprosy ought to be formed like the leagues already existing against tuberculosis and cancer. I am going to Berlin one of the first days of October to find several other leprologists of our union. I shall inform you of our deliberations on my return.

Yours very truly, DR. EHLERS.

Treatment of Diphtheria.

CAMDEN, N. J., Oct. 19, 1896.

To the Editor:—In the formula of my antiseptic solution in the JOURNAL, Oct. 17, 1896, just to hand, an important misprint has occurred. It should be in the formula *five* drops of carbolic acid instead of one drop.

Will you kindly and promptly correct the same in your next issue. Also I send you two letters which are of great interest in connection with my method of treating diphtheria. Please give them space. Yours very sincerely,

D. BENJAMIN, M.D.

CAMDEN, N. J., July 16, 1896.

Dr. D. BENJAMIN, *My Dear Doctor:*—In reference to your Antiseptic Treatment for Diphtheria, will say that I have used your treatment for the past three years in at least seventy-five cases of true diphtheria, without a death.

The membrane disappeared so quickly in certain cases that reporting the case to the board of health seemed unnecessary.

In a case of a little girl on South Fourth Street, Camden, who was taken with malignant diphtheria, her brother having died only a few days previous, in the hands of another physician, it was my privilege of witnessing the efficacy of this antiseptic treatment.

The membrane disappeared in less than thirty-six hours, the little patient convalescing on the fourth day. As long as the above treatment gives me this percentage of cures, I have no need for antitoxin. I remain, fraternally,

WM. J. KELCHNER, M.D.

CAMDEN, N. J., July 9, 1896.

To the Editor:—Learning that Dr. Benjamin is going to publish an interesting case of diphtheria, and seeing the case with him I desire to make the following statement:

During the practice of twenty-one years I have naturally met with a large number of cases of diphtheria; but the most malignant case that I ever saw to fully recover was Mrs. Samuel Mills, of 726 Clinton Street, this city, who had two children die in close succession from diphtheria, who had been attended by a homeopathic physician. Some time in April last, while attending the funeral of her last child that died, she was suddenly taken with a severe chill, and complained of a painful sensation in the throat, with intense pain in head and back. She was quickly driven home and Dr. Benjamin sent for. Her condition became rapidly worse and her symptoms so alarming that her husband called at my office and requested me to take charge of the case until Dr. Benjamin arrived.

Under the circumstances I consented to do so. I just had time to examine the patient, however, when the doctor drove up. He confirmed my diagnosis that it was not only a typical case of diphtheria, but a most malignant form of the disease. Upon examination he found her temperature to be 105, pulse 130, and respiration 26.

I saw at once that it was a case calling for the antitoxin treatment. Had she been my patient and had I been alone, I probably would have resorted to that remedy; and then Dr. Benjamin declared in the face of such an unfavorable prognosis, that he not only would cure the case, but would in a very few hours check the progress of the disease by employing two well tried remedies of his, both locally and internally; I must acknowledge that when he made that statement I became somewhat incredulous. But nevertheless the doctor evidently knew whereof he spoke, as in a remarkably short time, under the antiseptic treatment employed directly to the throat (which he claims destroys the germs and microbes at once), the patient showed marked symptoms of improvement. The temperature soon became normal, the diphtheritic patches soon cleared off, and in less than a week the patient was down stairs.

Respectfully,

217 South Sixth Street. E. E. DEGROFFT, M.D.

Drinking Waters for Travelers.

NEW YORK, Oct. 16, 1896.

To the Editor:—We regret to encroach upon your time and we hope you will pardon us for doing so as a result of our desire to have you favor us by correcting in the JOURNAL an error which inadvertently crept into the issue of September 19, page 664, where, speaking of the several drinking waters for travelers, it is made to appear that Apollinaris Water and the various Hunyadi Waters are aerated drinking waters of the same standing.

While it is true that Apollinaris is a dietetic and table water which the profession have time and again recommended to travelers in districts where the drinking water is the subject of suspicion, on the other hand the numerous Hungarian Bitter Waters coming from Buda Pest, which are called Hunyadi this or that, are strictly medicinal, being aperients, and, if reports go for anything, vary much from time to time in their specific gravity, in consequence of which Professor Liebreich (University of Berlin) in an article published in the *Therapeutische Monatshefte*, said:

"It is, therefore, a matter for high satisfaction that the aperient water 'Apenta,' from the Uj Hunyadi Springs in Ofen, has been placed under state control. The Royal Hungarian Chemical State Institute (Ministry of Agriculture) has undertaken this charge, and, therefore, it is now possible to obtain a water which is free from injurious extraneous waters infected with organic substances. The analysis has been published by Professor Liebermann, Director of the said Institute. The proportion of sulphate of soda to sulphate of magnesia is 15.432 to 24.4968 in the liter, so that this water is to be classed with the best aperient waters, and may be pronounced one of the strongest. Owing to the constancy of the Apenta Water ensured by the state guarantee, that confidence in aperient

waters, which had been lost, will be revived in favor of this important therapeutic agent."

As an error in the columns of a journal of such high standing and authority as yours is apt to confuse many readers to their disadvantage and ours, we trust that you will be good enough to give the matter attention. Yours very truly,

CHARLES GRAEF & CO.

He Likes our Journal, but Money is Scarce.

MILLBORO SPRINGS, VA., Sept. 6, 1896.

To the Editor:—I received your letter and the JOURNAL September 25; please accept my thanks for them both. After awhile (D.V.), I will become a member of the AMERICAN MEDICAL ASSOCIATION when money gets less ridiculously scarce.

There is no money in rural sections now. Corn 15c. per bushel, butter 12c. per pound, sweet potatoes $1.00 in July last, when a few years back they were $7.00 per barrel. Nothing that a farmer has will sell.

Send me the JOURNAL semi-occasionally. I enjoy the editorials; the terse and brilliant dash of the versatile pen tends to reason like the "needle to the pole," making their conclusions "solid buildings," no "castles in the air."

I am like you, doctor, about that terminology of "fair culture." We were all taught in about the first lesson in our Latin grammar that "os" and "on" were Greek terminations. As to "stomatomycosis" and "coprostasis," "fair culture" slipped like "Cæsar in Africa;" unlike him, however, I am sure he will not hold his "tripper," or wish to, when he looks for the words κόπρος and στάσις; nor will he find lead poisoning, whatever other morbific (escaping) elementaries there may be afloat. This is strictly between you and me. I am no critic, neither wish to be. In your position you are compelled to notice such blunders.

I will join the ASSOCIATION, nothing happening to prevent it, some time. I am sincerely, etc., W. S. S.

Twelfth International Congress of Medicine.

MOSCOW, RUSSIA, Oct. 10, 1896.

To the Editor:—Will you kindly insert in an early issue of your esteemed journal the following notice:

From the Surgical Section of the Twelfth International Medical Congress in Moscow.—Acting upon the advice of Dr. E. Browitz (Königsberg), the Surgical Section of the Twelfth International Medical Congress has decided, in view of the approaching Congress, to collect international statistics on narcotizations for the current year (1896). For this purpose the managers of the said Section apply to all their colleagues and earnestly request them to give answers to the following questions:

1. Number of narcoses from Jan. 1, 1896, to Jan. 1, 1897?
2. What narcotics were administered?
3. Number of fatal cases?

The Secretary of the Surgical Section, F. Rein, Malaja Dmitrowka, house Scheschkov, Moscow, Russia, will be glad to receive such information, and, if possible, not later than July 1, 1897.

F. REIN, M.D., Secretary of the Surgical Section.

Serum-therapy.

CHICAGO, Oct. 25, 1896.

To the Editor:—Lahmann's assertion (see "Serum-therapy," JOURNAL, No. 17, page 914), upon healing diphtheria by freeing the body of autotoxins reminds us of the old therapy of evacuating the toxins by moving the bowels and sweating an old plan, with right relinquished or left to the quacks. The renewal of the idea with some physiologic rays makes it no more valuable; we should be on our guard, having enough of the sort in the country. KL.

Journal Volumes for Sale.

CANADIAN, TEXAS, Oct. 15, 1896.

To the Editor:—Can you refer me to any one who can use eleven volumes of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vols. I to XI complete, bound and in good condition? Yours truly, CLAUDE WOLCOTT.

PUBLIC HEALTH.

Policemen Trained in Care of the Sick and Wounded.—A letter to the *British Medical Journal* states that a trained "Samaritan" is always present at each police station in Berlin, and 1,500 men have been trained in ambulance work. There are also "Samaritans" in each fire brigade. The latter have cared for 1,533 cases since 1893.

Providence Sewerage System.—Residents along the west shore of Narragansett Bay, in the vicinity of Field's Point, are greatly disturbed over the sewage from this city. The outlet of the mains is at Field's Point, and the tide carries the sewage along the flats to the west of Stave Goat Island and causes a constant nuisance. The residents of Washington Park are also among the complainants, and attorneys are being consulted to ascertain their legal rights in the matter. The sewerage system has just been completed and cost $2,000,000. It was thought by the Providence officials to be perfect, but it was predicted some time ago that an outlet inside of Warwick Neck would be useless. It will cost several more millions to continue the system to a safe point down the bay.

The Decadent American Birth Rate.—France, to-day, with all her industry, natural resources and ardent national life, finds herself face to face with this specter, and her statesmen are planning, by the modification of the inheritance tax-law, to inspire a desire on the part of parents for more children. In brief, by exemptions to families containing more than three children and by additional taxes on those with less, they hope to counteract the alarmingly crescent tendency of French married couples to rest content with very few "olive branches." In 1894 the birth rate in France was 22 to every 1,000 inhabitants, a decrease of 2.7 in a decade. This is believed to be the lowest birth rate in the world, and no wonder thoughtful Frenchmen are aghast; and to this must be added the facts that illegitimate births and divorces are on the increase. Our condition is by no means so bad, but it is bad enough to demand prompt attention and remedial efforts, if Dr. Billings' latest figures be trustworthy. In 1880 he says, our birth rate was 30.95 to every 1,000 people and in 1890 had dropped to 26.68. If it has pursued to now the descending ratio, it must be as we write, about 24.50; not 3 per 1,000 higher than the rate which frightens France. It appears further from the eminent sociologist's researches that the class of parents best equipped to bring forth and educate children are the least inclined to this patriotic responsibility. Into the causes of this we need not now enter and must content ourselves with simply entering a *caveat.—The New York Press.*

Regular Meeting Michigan State Board of Health, Lansing, Oct. 9, 1896.—The meeting was called to order by the president, Hon. Frank Wells of Lansing. The members present were Prof. Delos Fall of Albion, Mason W. Gray, M.D., of Pontiac, Judge Aaron V. McAlvay of Manistee and Secretary Henry B. Baker.

The regular business of auditing of bills and accounts was transacted. The secretary presented his report of the conditions of health in Michigan and of work in the office during the quarter ending Sept. 30, 1896. His report showed that the work of the office was fast being brought up nearer to date, and that work in connection with preparing the annual report of the secretary was progressing rapidly. He thought that by Dec. 31, 1896, his report for the year 1896 would be nearly

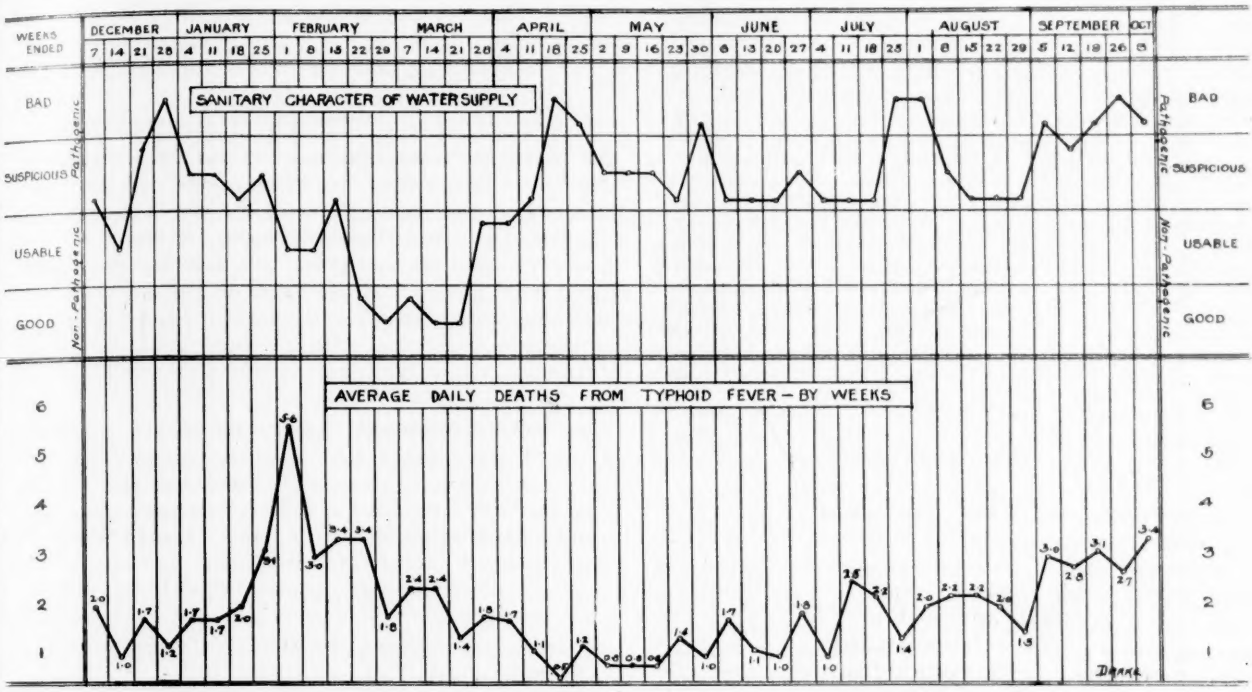
completed. The subject of the quarter-centennial of the State Board of Health was suggested, and the board appointed the secretary a committee to report at the next regular meeting a plan for an appropriate celebration of the twenty-fifth anniversary of the establishment of the board, which should occur July 30, 1898.

Doctor Baker said that during the past quarter he has occupied his spare time in ascertaining the results of the health work which has been done in Michigan, more especially for the restriction of dangerous communicable diseases. The statistics collected by the Secretary of State and those collected by the State Board of Health agree in indicating that lives have been saved and sickness prevented which has resulted in saving to the people of Michigan over $1,000,000 per year. The outlay has been very small. The public health work of the State has, therefore, been exceedingly profitable. In recent years the work has been greatly hampered for lack of money to properly distribute about the State the information necessary for the people to have in order to make the restriction of diseases as effective as it would be if all the people could be taught to coöperate in the work; nevertheless the results are very gratifying.

Clinic Instruction in Infectious Diseases at London.—According to the London *Lancet* for September 5, the facilities for clinic study at the public infectious disease hospitals has been materially improved during the past few years. It says that while the importance of such study in the regular curriculum of undergraduates has long been recognized, but it is only within recent years that proper facilities have been afforded for taking advantage of the valuable material to be found in the fever hospitals of the Metropolitan Asylum Board. "In former years the student had but few opportunities of becoming familiar with this branch of medicine, and it was by no means an unheard-of event for a student to complete his career without having seen half a dozen cases of infectious disease. That there is still evidence of the state of affairs which formerly obtained may be gathered from the fact that during 1895 no fewer than 1,277 patients, or a percentage on the total admission into the Metropolitan Fever Hospitals of 7.6, were after admission found not to be suffering from the diseases mentioned in the medical certificates upon which they were removed to hospitals, the percentage of mistakes at the Eastern Hospital at Homerton being 11 of the total admissions. At the present time five of the admirable hospitals of the Asylums Board, viz., the Eastern at Homerton, the Western at Fulham, the Southeastern at Deptford, the Southwestern at Stockwell and the Northwestern at Hampstead, are open under certain conditions to students and medical practitioners, while instruction in smallpox is also afforded at the smallpox ships in the Long Reach near Dartford. A student desirous of taking a course at one of the board's hospitals, must have completed his third year and have held the office of clinic clerk and dresser; he must then obtain the sanction of the medical school to which he belongs and pay a fee of three guineas for the first three months, and one guinea for each subsequent month to the clerk of the board, from whom he receives a card indicating the hospital to which he has to be attached. At this hospital he must attend at stated times for at least two days in the week for a minimum period of two months, and on the completion of his attendance he receives a certificate from the medical superintendent whose lectures and classes he has attended. While in the hospital the student places himself under the control of the medical superintendent and is bound to obey the regulations in force for the prevention of spread of infection. These rules comprise the wearing while within the hospital wards of brown holland overalls, consisting of coat, trousers and cap, which are provided by the board, and the use of what may be termed a discharge block, which consists of an infected room where the overalls are left, a lavatory and a theoretically uninfected room. The students are further required to keep their hair short and to be efficiently protected against smallpox. A duly qualified medical practitioner has equally to conform to these regulations and obtain the consent of the medical superintendent of the hospital at which he elects to attend. The student who attends these courses will obtain a fair knowledge of infectious disease, which will stand him in good stead in years to come, while he will also get an insight into the management of fever hospitals and the methods of disinfection practiced therein. The provisions in regard to instruction in smallpox differ somewhat from the above, as it is necessary for the student to reside for from two to four weeks on the smallpox ships, where he is provided with rations, apartments and washing at the extremely moderate sum of 12 shillings per week. The student has to travel to and from the hospital ships on the ambulance steamer and to furnish himself with a suit to which he does not attach much value, in order that it may be disinfected or destroyed at the termination of the period. If the student can take this course during the summer we can promise him, as the result of a personal experience, a most enjoyable and instructive little holiday."

Typhoid Fever in Chicago.—The diagram on the opposite page furnishes a most striking illustration of the relation of typhoid fever incidence to the character of a water supply—an illustration which, as the London *Lancet* has said of the first section of this diagram, reflects with mathematical accuracy the increase and decrease of the degree of pollution in the rise and fall of the death line. Referring to this diagram in his "notes and comments" on the September report, the Assistant Health Commissioner, Dr. Frank W. Reilly, says that up to the close of September the daily analyses of the public water supply made by the city bacteriologist, Dr. Gehrmann, and the city chemist, Mr. Kennicott, show the water to have been "bad" 22.5 per cent., "supicious" 55 per cent., "usable" 10 per cent. and "good" 12.5 per cent. of the time since the first of the year. During this period the death rate from the acute intestinal diseases and from typhoid fever—diseases directly related to impure water—has been higher than that of any other large city in the country and nearly double that of New York City. The deaths from typhoid fever began to show a marked increase in August, 1895. During the twelve preceding months there had been a total of 455 typhoid deaths, or an average of 38 per month. In August, 1895, there were 59 deaths; in September, 76; in October, 90, and during the twelve months ended Sept. 30, 1896, there have been 751, an increase over the preceding twelve months of 65 per cent. Comparing the first nine months of 1895 with the nine months of this year, the figures are: January 1 to Sept. 30, 1895, total typhoid deaths, 326; January 1 to Sept. 30, 1896, total typhoid deaths, 559; increase in 1896 over 1895, *71 per cent.* This is very nearly the death rate per 10,000 of population of the year 1889, immediately preceding the great typhoid epidemic of 1890-92. That year, 1889, the typhoid death rate per 10,000 of population was 4.83. The foregoing figures give a typhoid death rate of 4.63 for the past twelve months. As compared with deaths from all causes the comparison is even more threatening. The past twelve months have been much more healthful than 1889 in every respect except typhoid fever. The total deaths (for the twelve months) amount to 23,676 or 14.62 per thousand of population. In 1889 the death rate from all causes was 17.56 per thousand. The present proportion of deaths from typhoid is 3.17 per cent. of the total from all causes. In 1889 it was only 2.67 per cent. As set forth in the August report the unwholesome quality of the water has almost entirely offset the improved quality of the milk supply during the period, as shown by the deaths among infants and young children. While there has been a marked reduction in the deaths of infants

DIAGRAM SHOWING RELATION BETWEEN
SANITARY CHARACTER OF WATER SUPPLY AND DEATHS FROM TYPHOID FEVER IN CHICAGO
DECEMBER 1895 TO OCTOBER 1896



under 1 year of age, who drink little or no raw hydrant water, the reduction of deaths among children over 1 year of age who do drink hydrant water has been less than 1 per cent.

For a better understanding of the diagram it should be stated that the quality of the water is determined weekly from the combined chemic and bacteriologic findings for each day during the week. Four qualities are designated: "Good," "usable," "suspicious" and "bad;" and three degrees of each. When the supply is designated as "good" or "usable" the samples have shown an entire absence of any quality capable of producing disease. When designated as "suspicious" or "bad" the samples have shown qualities, at one or more times during the week, capable of producing disease. The quality of "good" is determined by an entire absence of nitrates and nitrites; by traces only of free ammonia; by .001:100,000 or less of albuminoid ammonia; by entire absence of pathogenic bacteria, and by a count of bacteria of less than 500 per c.c. The quality of "usable" is determined by an entire absence of nitrates and nitrites; by free ammonia not in excess of .004:100,000 at any time; by albuminoid ammonia not in excess of .02:100,000 at any time; by an entire absence of pathogenic bacteria; and by a count of bacteria not more than 1000 to the c.c. The quality of "suspicious" is determined by any presence of nitrates or nitrites; by any excess of free and albuminoid ammonias beyond .004 and .02 respectively; and by any excess beyond 1000 bacteria to the c.c. whether it occurs on one or more days. The quality of "bad" is determined by the presence of free or albuminoid ammonia beyond the above figures and of nitrates or nitrites; the presence of pathogenic bacteria and by a count of bacteria of more than 1000 to the c.c. The first, second and third degrees of the designated quality is determined by the more or less continual presence or absence of the factors of that quality and by the closeness to which the next quality is approached. The presence of any one of the factors of quality, even when the others are absent, designates the quality; and if they are all present, if only at one time, the highest grade of the quality is indicated. In addition to this the average findings and their relation to one another—with respect to the proportion furnished by each tunnel to the total supply—are taken into consideration in the statement of the sanitary quality of the total supply. The characterization is a matter of expert judgment and the figures in themselves do not always indicate the quality.

The highest point, 5.4 of the typhoid death line, during the week ended February 1, is thus accounted for by Dr. Reilly: "For several weeks before that ended Dec. 14, 1895, the water supply had averaged "usable" or "good," as indicated on the diagram, and the deaths from typhoid fever and from the acute intestinal diseases were below the average. During the first 17 days of December the precipitation was considerably less than one-half the average precipitation for this month during the previous 25 years—only .60 of an inch instead of 1.35 inches. The sanitary character of the water supply improved from the first degree of "suspicious" during the week ended December 7, to the second degree of "usable" during the week ended December 14. On the 18th 1.10 inches of rain fell; on the 19th 2.66 inches, and on the 20th 1.67 inches, making a total of 5.43 inches in 72 hours or 3.09 inches more than the average total for the whole month. This excessive rainfall flushed the sewage contents of the river and its branches into the lake and contamination was first noted on the 20th, increasing to the middle degree of "bad"—pathogenic—during the week ended December 28. The daily average of deaths from acute intestinal diseases during this week was 2.1. During the following week (ended January 4) this rate shot up to 8.4 per day—exactly quadrupled. The typhoid mortality was affected more slowly—the incubation period being longer—but during the week ended January 18, this began to rise from a previous average of 1.65 deaths per day until it reached 5.4 per day during the week ended February 1."

With the improved quality of the water, beginning during this week, the deaths began to diminish, so that between the weeks of February 22 and April 4, when the water was continuously "good" or "usable," the deaths declined from a daily average of 3.4 (Feb. 15-22) to 0.5 per day in the week of April 18, and an average of less than 1 per day, for the eight weeks from April 11 to May 30. The pollution line culminated again in the week of April 18, since which time it has varied from

first degree of "suspicious" to middle degree of "bad," and the death line has reflected this pollution at the usual interval—at the end of the diagram averaging 3.4 per day.

Diphtheria and Typhoid Fever in Ohio.—The following are the cities and towns in Ohio reporting an unusual prevalence of diphtheria and typhoid fever, since Aug. 1, 1896: Diphtheria: Minster, 39 cases, 6 deaths; Gervais, 27 cases, deaths not known; Brilliant, number of cases not known; Byer, 33 cases, 19 deaths; Conesville, 12 cases, number of deaths not known; Five Point, 7 cases, 2 deaths; New Matamoras, number of cases not known; Bucyrus, 18 cases, 2 deaths; Franklin, 10 cases, 6 deaths; Ironton, 33 cases, 4 deaths; Portsmouth, 56 cases, 7 deaths; Cincinnati, 131 cases, 35 deaths; Cleveland, 170 cases, 47 deaths; Columbus, 17 cases, 2 deaths; Grover Hill, 15 cases, 1 death; Marysville, 29 cases, 2 deaths; Niles, 23 cases; Springfield, 59 cases, 14 deaths; East Liverpool, 28 cases, 6 deaths; Troy, 11 cases, 1 death; Findlay, 14 cases, 5 deaths; total 23 places, 733 cases and 159 deaths. Typhoid fever: Gibsonburg, 105 cases, 9 deaths; Lancaster, 28 cases; Dyesville and neighborhood, 22 cases, 4 deaths; Conesville, 35 cases, number of deaths not known; Haydenville, 9 cases; Conneaut, 12 cases, 2 deaths; Cincinnati, 27 deaths; Cleveland, 40 deaths; Columbus, 11 deaths; Youngstown, 104 cases, 11 deaths; Salem, 16 cases, 3 deaths; Mansfield, 34 cases, 3 deaths; Hayesville, 11 cases, 1 death; total 13 places, 374 cases and 111 deaths.

Medical Practice Act of Illinois.—Resolutions adopted by the Illinois State Board of Health, Oct. 6, 1896:

WHEREAS, the wise and progressive enforcement by our predecessors of the Act to Regulate the Practice of Medicine in the State of Illinois passed July 1, 1877, has resulted in a general, but not uniform improvement of the methods of medical education throughout the United States, and a material elevation of the standard of professional attainments and ability necessary to obtain the legal right to practice medicine in many States, thereby securing in such States a better equipped, more competent and more scientific body of medical men to the great gain and advantage of the people thereof; and

WHEREAS, this latter result has been attained to the fullest extent in those States where the college diploma is not recognized as final, but only as a qualification for examination by a board whose members are not connected with, or interested in any college or teaching institution; be it

Resolved, By the present members of the Illinois State Board of Health, with the fullest appreciation of the invaluable work of their predecessors, that Medical Education and the status of the Doctor in Medicine have outgrown the limitations of the Medical Practice Act of 1877; now, therefore be it

Resolved, That said Act should be so amended as to require, first, that all applicants for the right to practice medicine and surgery or any of their branches in the State of Illinois, shall demonstrate their fitness for such practice, through an examination by a board of impartial, competent and practical examiners, skilled in the various branches of medicine and surgery, and no member of which board shall be connected or affiliated with or interested in any diploma-granting college or teaching institution. Second, that no applicant shall be eligible to such examination unless the legal possessor of a diploma of graduation from a medical college in good standing;

Resolved, That this Board earnestly invite the coöperation and assistance of kindred boards throughout the United States, to the end that uniformity of practice may ultimately obtain in the recognition of medical practitioners in all parts of the country; of all reputable medical colleges whose dignity and usefulness will thereby be promoted; of the medical profession of the State, as represented in the various medical societies, with the view of excluding the incompetent and unworthy from its ranks; and of the members of the forthcoming general assembly in this effort to protect the health and lives of citizens of the State.—J. W. SCOTT, Secretary Illinois State Board of Health.

SOCIETY NEWS.

The National Sanitary Association.—The second annual convention of this society was held in Brooklyn on October 14 and 15, Dr. Frederic Jewett, president. Important scientific business and the inspection of numerous public works important to sanitary officers in cities occupied the attention of the members to the full. At the closing session, officers for the ensuing year were chosen as follows: President, Dr. F. O. Young, Lexington, Ky.; vice-presidents, Drs. H. C. McLean, Brooklyn, N. Y., F. A. Wilson, Meriden, Conn., and C. S. Benedict, New York; secretary, T. E. Veal, Esq., Atlanta, Ga.; treasurer, J. Hoadley, Esq., New Haven, Conn.; executive committee, A. R. Moore, Esq., Brooklyn, N. Y., Drs. F. A. Jewett, Brooklyn, N. Y.; Wallace Sibley, Rochester, N. Y.; Archibald St. George, Fall River, Mass., and J. Hoadley, Esq. The third annual meeting was named for October, 1897, at Lexington, Ky.

The Sixty-eighth Annual Congress of German Naturalists and Physicians.—The Congress at Frankfurt opened with over 3,000 members inscribed, among them all the names most famous in science in Germany; Virchow, Leyden, Gebhardt, etc. The Empress Frederic was also present as a member. Some of the addresses are summarized elsewhere in the JOURNAL. The proceedings were preceded by laying the corner stone of a monument to Sömmering, a famous Frankfurt anatomist and physiologist, and, as the German papers state, the inventor of the electric telegraph.

The Twelfth International Medical Congress.—It is officially announced from Russia that no distinctions will be made against Jewish physicians coming to Russia to attend the Congress. All that is necessary is to have their passports *viséd* at home by the Russian consul before they start, which is the regulation for all foreign members of the Congress. Instructions to this effect have been forwarded to all the Russian consulates and embassies.

The American Laryngological, Rhinological and Otological Society.—The following circular has been issued:

NEW ORLEANS, Oct. 20, 1896.

My Dear Doctor:—The meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society will be held in New Orleans, March 3 and 4, 1897. This date has been selected as it will permit visiting members to see New Orleans during the carnival season and will enable them to secure half-rate railroad transportation. We shall be pleased to have you attend the meeting and to receive from you the title of a paper, on a subject within the object of the Society, to be read before the meeting of the Southern Section. The number of physicians who devote their attention to diseases of the ear, nose and throat has increased so much and the subjects for discussion have become so extensive that it is difficult in the time devoted to the annual meeting of the Society to give the necessary time to many important questions. On this account, the four Sections of the Society have been formed, the object of which is to promote the interest of the specialty during the interval of the annual meetings. A meeting of the Laryngological, Rhinological and Otological Society in the South is a distinctly new enterprise and should be encouraged. With the active coöperation of the physicians interested in this work, the carnival meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society will be an assured success.

Candidates for membership should send their names, properly endorsed, to Dr. Robt. C. Myles, Secretary, 46 West 38th Street, New York, or to Dr. W. Scheppegrell, so that they may be acted upon by the Council of the Society. Very truly yours,

W. SCHEPPEGRELL, Chairman Southern Section.

MISCELLANY.

Dr. S. C. Stanton, formerly connected with the Chicago *Medical Recorder*, is now editor of the *Medical Standard*. He is able and well qualified for the duty.

Promotion.—H. W. Sparks, formerly passenger agent for the Big Four Railroad, has been appointed traveling passenger agent, vice C. W. Norris, resigned. Those who remember the kindess and courtesy extended by this gentleman to the passengers on THE JOURNAL special train to Atlanta, will be pleased to learn of his promotion.

"Osteo-malacia" Cured by Oophorectomy.—The *Gaz. degli Osp.* of September 27, reports a case of severe and very painful osteomalacia cured by Piretti of Naples with a double normal ova-

riotomy, which it says should go on record as one of the really miraculous cures of modern surgery. The improvement was apparent in a few hours, and it was soon complete and permanent, over a year having passed since then, with progressive restoration to perfect health.

Death of Children from Hyperthermia.—A recent discussion of this subject brought out several cases of apparently healthy children whose temperature rose suddenly from some inexplicable cause to 108 degrees F., most of them fatal. Prompt cooling measures are the only means to save such cases. Some ascribed the fatal result to heart failure. Engel has observed a case of fatal hyperthermia following a warm "wrapping" in pseudo-croup, which produced irregular action of the heart.—*Deutsch. Med. Woch.*, October 8.

The South African Republic and the Geneva Convention.—Information has reached this country on September 30 that His Excellency, Mr. Bulaert Van Blockland, envoy extraordinary and minister plenipotentiary of the South African Republic at the Hague, forwarded to the Swiss Federal Council in the name of his government the act of adhesion of the South African Republic to the convention concluded at Geneva, Switzerland, Aug. 22, 1864, for the amelioration of the condition of the wounded of armies in the field. Prior to this the latest act of adhesion to the Red Cross Association was that of Siam in July, 1895.

Rare Case of Gallstones.—A recent number of the *Deutsch. Med. Woch.* describes a bunch of sixteen gallstones evacuated in the feces without much effort and no previous disturbances except a violent brief attack of fever and pain in the abdominal region two years before. The case was that of a woman of 46 years, who had worn a truss for umbilical hernia for sixteen years. The bunch of unmistakable gallstones weighed 12.83 grams and measured three by four centimeters. This recalls Morgagni's observation of a similar conglomerate which weighed 75 grams and consisted of sixty stones.

The Dumb Thermometer.—The improvement in this thermometer consists in the absence of the scale, which is apt to depress patients who catch a glimpse of it, realizing the importance of the temperature recorded. A small case fits over the instrument and a scale on this enables the physician to read the thermometer as he slips it inside after leaving the bed. Mendelssohn thinks it will be found useful. Dr. R. D. Murray several years ago recommended the physician, in cases of yellow fever, to always use the centigrade thermometer, as the general public in America were unfamiliar with it, and therefore could view a high temperature without fear.

The Indian Sacrifice.—Under British rule the Suttee, the Juggernaut and other ancient sacrifices of human life have been done away with among the natives of India. There is another huge sacrifice that remains to be attacked; namely, the enormous waste of the lives of Indian women and children that is constantly going on from want of medical aid. The customs of the country forbid the women from consulting men upon matters concerning the health either of themselves or their offspring. The same reluctance, however, does not prevent them going to their priests, who administer most disgusting and abominable methods of treatment. This should be a good field for medical women.—*Med. Press*, September 30.

Special Hernias in Women.—Waldeyer (*Centalbl. f. Gynäk.*, No. 33, 1896) demonstrated at a meeting of the Berlin Obstetrical Society some important anatomic researches as to the position of the ovary and other pelvic viscera. He maintains that the ovary lies in a shallow pit, which is really a triangle of peritoneum elevated at its margins, formed by the round ligament, the umbilical artery and the ureter. This pit is sometimes very shallow, but it may be very deep, so that the ovary lies in it practically in a state of prolapse, and the peritoneum may even form a hernial pouch, which has been found projecting into the lesser sciatic foramen or into the greater, either above or below the border of the pyriformis. Waldeyer exhibited an incipient hernial pouch of this kind. He likewise showed an inguinal hernia containing the Fallopian tube, and a pelvis with a defect in the symphysis pubis, into which a diverticulum of the bladder had forced itself.

Mixed Clinical Classes.—The announcement that Mr. Jonathan Hutchinson has been compelled to exclude ladies from his popular clinical afternoons on account of the unwillingness of the male patients to undress before them is full of significance. It is greatly to be regretted that this course should have been deemed necessary, for it places yet another obstacle in the way of the acquisition of clinical knowledge by women. Doubtless, in the near future, the public will become as accustomed to women as clinical observers as to women cyclists, and will abandon foolish protests against the one as they have ceased to objurgate the other.—*Med. Press*, September 30.

Bequests to Medical Charities.—The contest over the will of the late Thomas T. Wyman of Boston, by which $400,000, beside the residue of his estate, which is said to amount to $472,319, is left to various public charities, has been settled out of court. The will was contested by certain relatives, and it is stated that the amount given to effect the compromise will only slightly diminish the residue of the estate. The following medical charities receive $20,000 each: The Emergency Hospital, the Cambridge Hospital, the New England Hospital for Women and Children, the Boston Lying-in Hospital, the West End Nursery and Infant's Hospital, the Children's Hospital, the Massachusetts Charitable Eye and Ear Infirmary, the Sharon Sanitarium, the Boston Home for Incurables, the Consumptives' Home, the Carney Hospital and the Perkins Institution and Massachusetts School for the Blind. The residuary legatees are the Massachusetts General Hospital, the Boston City Hospital and the Massachusetts Homeopathic Hospital.

The Agglutinating Substance in Typhoid Serum.—It is announced as the results of the study of the peculiar agglutinating properties possessed by typhoid serum (which is now a fully established fact) that the albuminoid substances, fibrinogen, globulin or casein, isolated from the fluids of a typhoid fever patient by certain processes (described in the *Bulletin de l'Académie de Médecine*, September 29) take away with them the agglutinating property and retain it at least to a certain degree. They lose it in solution and recover it in their precipitate. This fact is interesting not only to the physician but to the chemist, who may find in this agglutinating property some new reaction for the difficult study of albuminoid substances. Others have discovered the same property in the serum in "proteus" infections.

Normal Physiologic Standards in Mexico.—It has been found that the atlases and charts published abroad and accepted as the standard of the normal individual do not apply to Mexico. Vergara de Lope announces that in his investigations the characteristics of the urine, for instance, differ from those in other countries; it is more concentrated, less in quantity and lighter colored. He ascribes the two former to the effect of the altitude on the intra-vascular arterial tension, as the tension of the blood diminishes with increased rarefaction of the atmosphere. He does not attempt to explain the lighter color, merely remarking that the hematic pigment, which some consider the cause of the coloration of the urine, is present in this concentrated urine to excess and, therefore, the cause of the lack of coloration must be sought elsewhere.—*Revista Quincenal*, September 1.

When Licensing of Milkmen not Authorized.—Where it is doubtful, after giving full force to all the provisions of a city's charter, whether the charter authorizes the licensing of milkmen

the supreme court of errors of Connecticut holds, in the case of State v. Smith, decided May 14, 1896, that it does not authorize it. To illustrate: The charter of the city of Bridgeport authorized the common council to make ordinances, not inconsistent with law, relative to commerce; to the inspection of produce brought into the city for sale and the election of inspectors for that purpose; to the sale or offering for sale of unwholesome produce of all kinds; to "licensing cartmen, truckmen, hackmen, butchers, bakers, petty grocers, or hucksters and common victualers, under such restrictions and limitations as said common council may deem necessary and proper" to the health of the city; and to "any and all other subjects that shall be deemed necessary or proper for the protection and preservation of the health, property and lives of the citizens." Here the court does not find authority for an ordinance excluding every one who has not received a license from the local health officer from participating in the business of a milkman within the city when the public statutes leave it open to all on equal terms.

Convicted of Being an Unregistered Druggist.—The defendant in the case of Queen v. Simpson, according to a report in the Canada *Law Journal*, being owner of a large departmental store, was charged with keeping open shop for retailing, dispensing and compounding poisons contrary to the law of the Province of Ontario. It appeared that part of his store was set apart for the drug department and was under the management and control of one Lusk, a duly qualified and certified chemist, registered under the pharmacy act, who dispensed the drugs, giving bills for the same on which defendant's name was printed, and on some of which his own name was also printed with the word "druggist" under it. The defendant was never inside of the drug department nor interfered with the conduct of the business. Lusk purchased all the drugs on his own judgment, but with the defendant's money, who received the proceeds, Lusk receiving a certain portion for his remuneration under agreement with the defendant. Under these circumstances, the high court of justice of the Province of Ontario held June 16, 1896, that the matter must be remitted to the magistrate (who had dismissed the information) with instructions to convict the defendant.

Formation of Urobilin.—The conclusions of an article on this subject in the *Brit. Med. Journal*, October 3 are as follows: 1. The bile pigment present in the upper part of the small intestine during its passage along the alimentary canal is converted into some colorless chromogen, to be again converted in the lower part of the small intestine into bile pigment. 2. Urobilin is, as a rule, formed in the large intestine below the ileo cecal valve, and only rarely in the small intestine; that is to say, only in those parts where the intestinal putrefaction is most active. 3. The staining of the wall of the cecum and large intestine with urobilin is due to postmortem diffusion, and is not any indication of the absorption of urobilin in the living animal. Why it should in some cases be most marked in the cecum and just below the cecum, and not in the rectum, can only be explained by the fact that those parts are generally found in the postmortem room more decomposed than the rectum. 4. The increase of urobilin in the urine, as well as having pathologic significance—as has been already recognized in cases of internal hemorrhages, such as cerebral, peritoneal or hemorrhagic infarctions and extrauterine pregnancy, and probably when red blood corpuscles are being destroyed, as in infectious fevers, scurvy and pernicious anemia—points also in favor of increased intestinal putrefaction, and may be a useful chemic test for such purpose.

Photograph Evidence.—In an action to recover damages from a city for injuries sustained through a fall alleged to have been occasioned by an inequality that had been negligently allowed to exist in a sidewalk, where the defense of contributory negligence was pleaded, it was contended by counsel for plaintiff that photographs of the place where the accident occurred should not have been admitted in evidence. He argued that they did not tell the story told by the human eye, or in other words, that the picture they made to the apprehension was not the picture (of the obstruction in this case) made to the mind by the eye. One of the illustrations used to show how little analogy there is between a photographic plate and the retina of the human eye, and that the imaging capacity and the character of the imaging performance of the former afford no just criteria of the imaging capacity and performance of the latter, was that the skin of the human face, which under the microscopic inspection of a physician is smooth and absolutely free from eruption, under the pitiless revelation of a photographic plate may be found to be dense with the pustules of smallpox. But the United States circuit court of appeals does not feel that it can concur fully in this view of the question, holding, instead, that the trial court did not err in overruling the objection, and in considering the objection as going to the effect of the testimony, and not to its admissibility. Scott v. City of New Orleans, decided June 9, 1896. At the same time, it acknowledges there is much force in the suggestions of the counsel, and says that touching the effect of this testimony the jury should be fully and carefully instructed, and warned against its liability to mislead.

"Douglasitis."—This is the name given by Condamin to the chronic inflammation of the recto-uterine cul-de-sac, which differs from Schultze's posterior parametritis, as there is none of the tendency of the latter to cause retraction and afterward extension of the sacro-uterine ligaments, and thus favor retroversion of the uterus. Douglasitis is usually consecutive to salpingian lesions, but it also occurs as a primary affection, as Condamin has found in the course of four laparotomies. Repose in the dorsal decubitus alleviates the pain of douglasitis much more readily than of salpingitis, and this is one means of diagnosis. It is characterized by the multiplicity of the lesions, which can be palpated through the vagina by inserting the middle and index fingers, when not only the sacro-uterine ligaments can be distinguished, but a number of small attachments, traversing in every direction the floor of the recto-vaginal pouch. It is treated with massage, and systematic distension of the vaginal cul-de-sac by means of tampons (columnization), but if it does not yield to simple methods, and if there are diseased appendages, laparotomy is indicated, and after detaching all the adherences, etc., an anterior abdominal hysteropexy, to prevent the uterus from becoming displaced. —*Lyon Méd.*, September 27.

Absorption of Medicines by the Vagina.—In 1886, at the annual meeting of the Mississippi Valley Medical Association, Dr. I. N. Love read a paper with the title "Artificial Alimentation and Medication," wherein he gave clinical evidence in favor of the vagina being made available (where the conditions would permit) as a medium for the administration of medicines and predigested food. Ten years' additional experience has strengthened him in his views, and they are confirmed by a recent article in the *Collegione Italiano di Litture sulla Med.*, No. 2. It states that in one hour after the insertion of a tampon saturated with a 20 per cent. solution of potassium iodid the urine contained iodin, the maximum of elimination being twenty-four hours after application, and in forty-eight hours no trace of iodin is found. In the fever patients the absorption was very rapid, while in the hysterectomies it was not altered. Iodoform is absorbed in small quantities, commencing seven hours after application and lasting twenty-four hours. To secure rapid absorption the vagina should be insufflated with fresh iodoform, which should be allowed to remain several days. Salicylic acid is rapidly absorbed in large quantities, appearing in the urine in one hour and disappearing in twenty-

four hours. Salol is also rapidly absorbed, and remains for a long time traceable in the urine. Antipyrin is also rapidly absorbed, appearing in the urine one and a half hours later, and remains for forty-eight hours; but the antipyretic power is less than when administered by the mouth. The conclusions reached here are, in general, that the vagina undoubtedly has absorptive powers, and that these powers are increased in pregnancy and in the puerperal state and in the fevers.—*Medical Mirror*, September.

Improvements in Antitoxin.—Behring stated at the recent Congress of Naturalists and Physicians, that the inconveniences which sometimes follow the use of antitoxin are due to the serum it contains, rather than to the antitoxins, as they are produced as frequently by injections of the serum alone. Consequently he is striving to manufacture antitoxin in as concentrated form and with as little serum as possible. It will soon, therefore, be more accurate to designate it antitoxic therapeutics, instead of serum. Knoll's investigations have established the fact that the blood assimilates the entire amount of antitoxin injected, and that it is not taken up by the corpuscles, but by the fluid elements of the blood. The antitoxins thus assimilated gradually vanish out of the blood again, until in eight days they are reduced to a tenth, and by the end of the third week they have almost entirely disappeared. Behring asserts, therefore, that they positively confer immunity for at least three weeks, and not longer than eight or ten. It is a curious fact that the length of the period of immunity is fixed, and does not vary with the quantity of antitoxin injected. The conclusions of a recent critical and experimental study of the effects of antitoxin on the organism, by Poix in the *Presse Méd.* of October 3, confirm Behring's statement that the accidents following the use of antitoxin are due to the serum and not to the antitoxins. Poix warns against its use on tuberculous patients, as serious congestions, etc., are liable to follow in these cases. Behring's resignation of his professorship at Marburg was not accepted, but he was given an extended leave of absence. Beside the Höchst factory where the antitoxin is produced for sale, he has his private institution at Marburg, devoted to strictly scientific research, and the "standardizing" institute in charge of Professor Ehrlich, which is under government control.—*Therap. Woch.*, October 4.

Louisville.

Annual Mortality Report.—The report of Health Officer White for the past year contains much that is of interest. He reports a total of 3,295 deaths, the death rate per 1,000 based on a population of 211,100 being only 15.5; death rate of whites, 14, and of colored 22.7. The report shows for the first time the prevalence of the contagious diseases as it is the first year that the reporting and placarding of these cases has been observed. There were 137 cases of diphtheria with 72 deaths, a mortality of 52.5 per cent. There were 238 cases of scarlet fever placarded, with four deaths. There were 2,283 vaccinations reported, 724 diseased cattle were killed and 4,514 diseased cattle condemned and sent out of the city. There were 225 stillbirths. Consumption caused 370 deaths, typhoid fever 131 deaths, pneumonia 269; whooping cough 11. Of the total number of deaths 565 were under 1 year of age and 898 under 5 years of age. Two thousand, four hundred and forty-three were white, 852 colored; 67 more male than female.

Cincinnati.

The Cincinnati Hospital has again broken into the editorial columns of the daily press and the present management is severely criticised for the manner in which the institution is being run. During the past few days several women have escaped from the hospital and the last two give as an alleged reason for their action that they were almost starved. The much promised reforms have so far failed to materialize. The Board of Trustees have passed a resolution to ask the next legislature to appropriate $50,000 to make necessary improvements, the Board also refused the request of the Board of the Eclectic Medical Institute to allow their students to witness the operation (free of charge) on patients sent by the college.

At the first meeting of the Academy of Medicine, Dr. J. C. Oliver read a paper on the "Surgical Treatment of Epilepsy." He considered the operative treatment warranted in only a very small percentage of cases. This week Dr. R. C. Hill read a paper on "Intestinal Polypus as a Cause of Death."

The mortality report for the week shows: Zymotic diseases 11; constitutional diseases 19; local diseases 36; developmental 10; violence 3; under 5 years 22; from all causes 79; annual rate per 1,000, 11.73; preceding week, 93; corresponding week 1895, 99; 1894, 87; 1893, 93.

Dr. Albert Snell has been arrested on a warrant sworn out by Dr. Frank Winders, secretary of the State Board of Medical Examiners, charging him with violation of the medical practice laws. This is the first arrest under the new law.

The State Board of Health of Indiana have ordered all health officers of the State to provide themselves with a long glossy linen duster and skull cap to be carried in a separate bag and to be worn whenever they enter a building when any contagious disease exists.

A case of hydrophobia recently developed in Columbus, Ohio. The patient was bitten by a dog last July while attempting to give the animal, which had been bitten by another dog, some medicine. For several hours before the man died it became necessary to strap him to his bed.

Suit for false Committment.—A woman residing in Columbus has recently entered suit against Dr. W. F. Scatterday for $5,000, alleging damages to this amount as a result of her commitment in an insane asylum by the doctor, who was her physician. She claims she was sane at the time.

Washington.

Health of the District—The report of the health officer for the week ended October 17 is as follows: The death rate during the past week stood at 21.48, as compared with the average rate of 23.53 and with 26.80 in the same period last year. The deaths reported to the health department numbered 116, of which 60 were white and 56 colored. As compared with the late preceding weeks there was a slight decrease in the chronic brain, heart and kidney disorders, and in diarrheal complaints. In those of the lungs and of children under 5 years old there was an increase. Of diphtheria five deaths occurred, and none of scarlet fever. The general health of the city, as indicated by the causes of mortality presented the same average above the normal as has prevailed throughout the fall months, the death rate running from 2 to three below the annual average per 1,000 inhabitants. The new cases of diphtheria were 12, houses released from quarantine 8 and those left placarded 31. Of scarlet fever one new case reported, 2 houses released from isolation, leaving 5 placarded.

District Medical Society—Toner Memorial Meeting.—At the regular meeting of the Medical Society held on October 21 all regular business and papers were suspended and the meeting made a memorial one in honor of the late Dr. Joseph Meredith Toner. The meeting was called to order by Dr. S. C. Busey, the president, who began the exercises by a most interesting life sketch of Dr. Toner and closed his remarks by paying high tribute to his memory. Drs. W. W. Godding, Charles H. A. Kleinschmidt and J. D. Morgan read interesting addresses in his praise. The papers read at the meeting will be published and distributed among the profession upon application.

Adverse Report on a Dental College.—A special committee consisting of Drs. W. P. Carr, J. Ryan Devereux, Clifton Mayfield, B. F. Odell and Henry Noble, appointed by the commissioners to examine the standing of the proposed Washington College of Dental Surgery, which has applied for a

license to do business in the District, has submitted an adverse report. All the committee except Dr. Odell signed the report, which says: "The college is just such an institution as the law proposes to keep out of existence. It has no endowment or building, and its total plant is valued by the incorporators at $1,000. The faculty have not demonstrated any ability to teach, except in the National Homeopathic College, which was ruled out of existence by Judge Miller. Two members of this proposed faculty were members of its faculty. Members of the faculty of the proposed college admit that it is based upon the Washington Homeopathic Medical College dental department, whose plant they purchased and a majority of whose faculty they have absorbed, but proclaim their intention of raising the institution out of the metaphorical mud into which they admit it has fallen. Their course and actions, however, when connected with the Washington Homeopathic Medical College dental department, and their present attempt to justify that course render it, in the opinion of your committee, extremely improbable that they will make any serious effort to do so, while their lack of endowment, lack of sufficient appliances and lack of eminent reputation preclude such a possibility, even in the face of earnest effort. None of the members of the proposed faculty belongs to any reputable medical or dental society or association, regular or homeopathic, except one, who is now under investigation by the Dental Society of the District of Columbia for unprofessional conduct. We would, in conclusion, call attention to the fact that Dr. Odell, who was appointed on this committee, is also a member of the proposed faculty, and that while he was present at our most important meeting, he declined on the ground that he could not pass upon his own character, to sign any report of this committee."

Philadelphia.

THE MUTUAL AID ASSOCIATION of the Philadelphia County Medical Society will hold its annual meeting on November 9, at the residence of the president, Dr. John C. Da Costa. The eighteenth annual report will then be presented by the treasurer, Dr. Geo. B. Dunmire. The total amount of money now at interest is $12,889.63, an increase of $1,103.63 since the last report. The members of the Association number 122, of whom 87 are life members. The Association has two annuitants, one widow and one orphan daughter under its care.

THE MEDICAL SCHOOLS opened their doors on the first of this month with an increase in the number of matriculants over last year. Provost Harrison of the University of Pennsylvania formally opened the several departments. He referred particularly to the new Dental Hall and the dormitories among the evidences of progress since last year. Dr. W. M. L. Coplin, the newly elected professor of pathology and bacteriology at Jefferson College made the introductory address. At the Medico-Chirurgical, Dr. Isaac Ott opened the session with a lecture on Claude Bernard and recent advances in physiology. Dr. Elizabeth R. Bundy delivered the address before the students at the Woman's Medical College, particularly impressing upon them the importance of hygienic living and the evils of over-study, and spoke on the baneful results of a resort to bromids or to narcotic drugs or the caffein-bearing preparations. She incidentally paid a well deserved tribute to the bicycle as a means of outdoor exercise for women and as an incentive to more rational dress.

THE COLLEGE OF PHYSICIANS held its first fall meeting on the 3d inst, the president, Dr. J. M. Da Costa, in the chair. Dr. William J. Taylor and Dr. Chas. W. Burr read a paper entitled "Report of a Case of Tumor of the Medulla Oblongata." It was remarked that the symptoms during life were insufficient to establish the diagnosis and the lesions found at the autopsy did not entirely explain the paralysis. The patient was a woman, 55 years of age, who after some loss of power in the left arm and leg, complained of headache and double vision, with a tendency to fall to the left when walking. Examination of the eye-ground proved negative. The loss of power gradually became more marked until paralysis became complete on the left side. She then had an attack of pneumonia and died in convulsions. The urine contained neither albumin nor sugar. On removing the skull cap, the brain appeared at first to be normal, but on closer examination a growth was discovered involving the medulla, especially on the right side, projecting between the lobes of the cerebellum. The tumor was found to be a sarcoma. It was strange that with so much pressure on both sides of the medulla, that symptoms should have been produced only on the left side of the body. The Sections of the College have all opened their winter sessions with interesting meetings and active discussions. Dr. B. C. Heist read a paper before the Section on Gynecology, October 15, on "Technique in Cæsarian Section," Dr. Sprengle read a communication on "Prolonged Pregnancy," and Dr. Chas. B. Penrose one on "Hysterectomy by Combined Operation through the Abdomen and Vagina." Before the Surgical Section, Dr. Randolph Faries described a "Modified Form of Antero-posterior Brace for the treatment of Pott's Disease." A death during the administration of ether was reported by Dr. Jos. M. Spellissy. Dr. John B. Roberts demonstrated a "Successful Operation for Cleft of Hard and Soft Palate," by the case of a patient. Dr. J. William White and Dr. Alfred C. Wood reported on "Some Recent Cases of Renal Surgery."

THE PHILADELPHIA COUNTY MEDICAL SOCIETY has been prospering under the presidency of Dr. James C. Wilson. At the meeting on the 14th inst. Dr. F. W. Talley read a paper on the "Proper Position of Celio-hysteropexy in Gynecology;" Dr. A. O. J. Kelly reported four cases of "Essential Paroxysmal Tachycardia," and Dr. Chas. W. Burr read a paper on "The Relation of Anemia to Chorea," in which any causative relation was denied, and the opinion expressed that when concurrence existed, it might be accidental or the anemia might be due to the chorea or to the causes which produced the neurosis.

MR. WILLIAM MACEWEN of Glasgow was recently entertained by a series of lunches and informal receptions, and received considerable attention during a recent visit to this city. He expressed special interest when inspecting the new wards and recent improvements in the Pennsylvania Hospital, which is the oldest general hospital in this country.

Detroit.

THE MICHIGAN COLLEGE OF MEDICINE AND SURGERY opened with 100 students. A building has been procured in addition to the college which will be used for extra clinics, general medicine and skin diseases. There has also been lobby rooms fitted up for the students. Dayton Parker has been elected to fill the chair of gynecology, vice E. W. Jenks, resigned, and W. J. Brand to lecture on anatomy.

AT THE ANNUAL MEETING of the Detroit Medical and Library Association held October 5, the following officers were elected: President, H. W. Longyear; vice-president, Frank H. Walker; secretary, P. C. McEwen; treasurer, A. P. Biddle; librarian, Wm. C. Stevens. After the election of officers, E. T. Tappey entertained the members of the society with a banquet.

AT THE REGULAR MEETING of the Detroit Medical and Library Association held October 12, H. O. Walker presented some pathologic specimens, among the number being an ulcerated appendix with a fistulous opening. The case was one of a history of several attacks, a suppurating kidney in which he had done a nephrectomy, also about twenty gallstones, for which the day before he had made the operation of cholecystotomy. Each of the patients was doing well at the time of the report. Theo. A. McGraw read a paper on "The Utility of Omental Splints in Intestinal Surgery," in which he said that he felt warranted in bringing the procedure before the profession for discussion on account of its importance. He also drew atten-

tion to the fact that the omentum is extremely mobile, that it can be drawn to any part of the intestinal tract that is covered with peritoneum. He said that in certain diseases it becomes atrophied and in some persons is quite small, and especially was this so in tubercular subjects, where we find at the autopsy but a small remnant of the omentum. The Doctor said that what was characteristic of all peritoneal membranes was also so of the omentum, the short period it takes to fasten itself to any irritated surface and so acts as a bearer in preventing intra-peritoneal suppurations from becoming diffused, and that localized abscesses are frequently found in which the omentum has been the means of holding the walls intact, that a piece of omentum applied over an intestinal fistula will after twenty-four hours make a strong obstacle to the discharge of feces, and what is very desirable, this omental splint is very tolerant to its surroundings, also that the practical value of the omentum splint is its application in wounds and fistula of the large intestine, and that it made a safe union in operations on this viscus. The essayist called attention to the fact that inflammations of the appendix are liable to result in suppuration which invades the connective tissues behind the gut; that an abscess also acted in the same way and might affect a large portion of the intestine. When a bowel under such circumstances became torn or ulcerated through, its repair was exceptionally difficult. He found that Lembert stitches in that region were out of the question, as there is no peritoneum in these desperate cases. There were only two successful procedures, one of which is the resection of the affected portion, and the other the closure of the fistula by an omental splint. He reported two cases which he had had at St. Mary's Hospital. Mr. C., aged 24 years, entered St. Mary's Hospital Jan. 1, 1895, with a suppurating appendicitis. The abscess was opened, and on leaving the hospital after recovery, he was cautioned to return at once for operation if there should be any recurrence. On November 26 he returned with renewed inflammation in that region, the appendix was removed and the adhesions broken. There was no rise of temperature or sepsis, but on the third day there appeared some thin feces on the edge of the wound, and it became necessary to remove the stitches. The discharge of feces from the wound increased daily in quantity, and soon there was an opening in the gut the size of one's little finger. Practically no feces passed through the rectum and anus. Lembert stitches for this false anus were out of the question on account of the absence, over a large area, of both muscular band and peritoneum. An incision was made in the peritoneum over the gut to the extent of 2½ inches, through which cut the omentum was drawn out and fastened with sutures all around the exposed part of the bowel, tucking well down behind and under the intestine. On the next day he had a normal evacuation of feces. That which could not be accomplished by purgatives or enemata took place spontaneously, as soon as the mechanical integrity of the bowel was restored. A man aged 39 years entered St. Mary's Hospital Dec. 11, 1895, with chronic appendicitis. On December 13, the appendix was removed and the wound closed. A month later the wound reopened, fecal matter began to pass through it, and on his return to the hospital he was too weak for operation. About three weeks later, his general condition having improved, the abdomen was again opened. The omentum was then brought down and wrapped in a large fold around the diseased bowel, and fastened with sutures to the neighborhood of the wound, so that the wound was completely enveloped by it. Three weeks later he was sent home completely cured of his fecal fistula. From these two cases it must be conceded that the value of omental splints under these conditions is obvious, yet Dr. McGraw said that he should lay it down as a rule that, whenever a lesion of a large intestine demanded a suture, the line of union should, if possible, be supported by a thick layer of omentum, but that in wounds of the small intestine, this procedure was not necessary, although he would feel more safe from accident with this additional safeguard.

THE WAYNE COUNTY MEDICAL SOCIETY at its annual meeting October 1, elected the following officers: President, Geo. E. Frothingham; vice-president, Lewis E. Maire; secretary. J. F. Patton; treasurer, C. Henri Leonard; board of directors, E. B. Smith, Frank S. Hough, T. J. Parker, O. P. Eaton and Kenneth Gunsolus. On the same evening the retiring president, E. B. Smith, read his annual address, after which the retiring secretary, Frank S. Hough, presented his report, which was approved. At the regular meeting of the Society October 8 (memorial night), E. B. Smith read a biographic paper, taking up the lives of Wm. Brodie, who had been president of the Wayne County Medical Society a number of years, Henry F. Lyster, S. D. Richards, C. J. Lundy and August Kaiser, all of whom had been prominent members of the above society.

Annual Report of the Surgeon-General of the Navy.—Surgeon-General Tryon, chief of the Bureau of Medicine and Surgery, has submitted his annual report to the Secretary of the Navy. Estimates have been submitted for two ambulances for use at the naval hospital at Portsmouth, N. H., and Mare Island, Cal., where they are urgently needed.

"The cemeteries of the several naval hospitals have had very little done for them since the war, and in no way creditable to government establishments," says the Surgeon-General.

"Special appropriations will be required for each one to place them in a condition that they can be cared for in the future by the hospital force.

"Attention is again called to the necessity of providing improved accommodations for the sick and wounded on board vessels of war, and to the assignment, when practicable, of sufficient space on the gun deck for hospital purposes."

The Surgeon-General says that the passage of the bill organizing the army hospital corps has already proved of great benefit to the militia of the different States, and the passage of a similar bill for the navy would also be advantageous to the naval militia, now being rapidly organized.

AMBULANCE OR HOSPITAL SHIPS.

A strong argument is made for ambulance or hospital ships specially fitted up. Considerable attention is now being paid to the construction of such vessels abroad, and it is universally conceded that they should be designed and built for this particular duty, and considered an essential part of the fleet of war.

The health of the navy is reported as good. The care and comfort of the sick and wounded of the navy have been much improved by the adoption of iron swinging cots for sick bays of all vessels, and the establishment of an ambulance service at the naval hospitals at Chelsea, New York, Philadelphia and Norfolk.

FOOT BALL AT ANNAPOLIS.

In a short chapter about the Naval Academy, the Surgeon-General says:

"The good health of the station has been maintained throughout the past year. There were nineteen admissions, involving sixty-one sick days, for injuries received at the game of foot ball, and ninety excuses from drills from the same cause. The injuries consisted of one luxation, two fractures of bones, one inguinal hernia, two cases of concussion of the brain, and a number of minor sprains and contusions.

"Attention is called to the unsuitable character of the academy buildings, many of them being badly ventilated, unsatisfactorily lighted and heated, and some of them in a condition almost beyond repair.

"The sewerage system of the academy is defective and unsatisfactory, and proper means should be adopted for carrying the sewage into deep water at some distance from the academy grounds.

IDENTIFICATION OF RECRUITS.

In regard to the identification of recruits, the Surgeon-General says:

"In consideration of the effect upon the discipline and general tone of the enlisted force of the navy, the importance of preventing deserters and dishonorably discharged men from re-entering the service has caused the question of the identification of such undesirable persons to be carefully investigated.

"The anthropometric system of M. Bertillon presents the advantages over other methods of conformity to scientific requirements and capability of indefinite expansion.

"The system employed by the United States army is a modification of the above, in which personal marks or characteristics take the place of anatomic measurements, and since its adoption in 1889 has been attended with excellent results, as shown by the detection of a large number of deserters and the progressive diminution in the number of undesirable candidates presenting themselves for enlistment."

The bureau is at present considering some plan of combining, modifying and selecting from these two systems a method especially adapted to the requirements of the naval service.

VACANCIES IN THE MEDICAL CORPS.

The continued impossibility of filling vacancies in the medical corps is reverted to by Surgeon-General Tryon in the following words:

The record during the last fiscal year is nearly a repetition of the figures presented in the last annual report. There were 341 applications made to the department for appointment as assistant surgeons in the navy. Out of the number only thirty-six applied for permission to appear before the naval medical examining boards.

Of the 36, 22 availed themselves of the opportunity to appear before the boards, and of this number there were 4 rejected physically and 12 rejected professionally leaving only 6 out of the 341 original applicants, representing every section of the country, who were found qualified for appointment as assistant surgeon.

This state of affairs has existed for years, and will undoubtedly continue until there is some favorable legislation for junior medical officers of the navy.

At this date there are 10 vacancies in the grade of assistant surgeon, and the bureau is embarrassed by not having a sufficient number of medical officers to fill important stations ashore and afloat.

Many ships and hospitals are kept without their legitimate quota of officers, and, unless this is in some way speedily remedied, by reason of increase of men in the navy and number of new ships placed in commission annually, serious consequences must follow. On account of the great number of vacancies existing and the probability of the number increasing instead of diminishing, it is strongly urged that the recommendation contained in the bureau's letter addressed to the department on the subject, dated Feb. 8, 1896, be approved, that "a special law be enacted authorizing the Secretary of the Navy, during the present exigency, to appoint acting assistant surgeons for temporary duty in the navy until the number of vacancies in the regular medical corps of the navy are filled." When this is accomplished, their services can be dispensed with and no further appointments made, except in time of war or until additional vacancies occur in the assistant surgeons' grade.

In regard to local institutions, Surgeon-General Tryon says:

WASHINGTON NAVY YARD.

The sanitary condition of the yard during the past year has not been satisfactory. During the summer and autumn months malarial fever of a severe type prevailed extensively, a large proportion of the cases being of a remittent character. During the year there were 250 admissions and 48 readmissions to the sick list. Of this number 216 returned to duty and 79 were transferred to hospital.

There was a loss of 1,021 days from sickness, due principally to the large number of cases of malarial fever.

Reports have been received that apprentices transferred from this yard to other stations all suffered from attacks of malarial fever, undoubtedly due to climatic exposure while undergoing instruction at the yard.

MARINE HEADQUARTERS.

The health of the post has been satisfactory during the past year except that in the months of September, October and November an unusually large number of cases of malarial fever prevailed, which undoubtedly was caused by the insanitary condition existing at the navy yard, which was made the subject of a report by a sanitary board to the department in May, 1895.

Beyond some minor improvements in the introduction of modern water closets and bath tubs, there has been no change in the general sanitary condition of the post.

NAVAL HOSPITAL.

No material changes have been made during the past year in the hospital grounds. The paving of 10th street east which has been commenced, will add much to the comfort of the hospital patients. The hospital is now being furnished with a modern operating room, properly equipped for the performance of operations, and it is hoped that it will be completed at an early date.

The necessity for increased accommodations for the sick at this establishment is apparent.

The records of the hospital for the five years 1891 to 1895, inclusive, show 36 admissions of officers, with a total of 1,265 sick days; other admissions, sailors and marines, number 528. Patients are supplied to this hospital chiefly by the navy yard and marine headquarters, but from time to time they are transferred here from other hospitals, from coast-survey vessels and from other vessels, foreign or belonging to our own navy, which may be in port; also old sailors and marines on the retired list who have no suitable home and when taken ill find a refuge here.

The officers attached to the navy yard and marine headquarters number about 50, while the number of sailors and marines is about 240. Beside the above, there are in and about Washington 250 or more officers, active and retired, liable to need hospital accommodations and treatment.

The situation of the hospital is excellent, occupying an entire square of land on four streets, having thus abundant sunlight and fresh air. The elevation above the navy yard is inconsiderable, but sufficient to make a very great change perceptible in the condition of malarial patients transferred. The mere change from the one place to the other has sometimes sufficed to put a stop to an attack of malarial fever.

There is but one separate room in which a sick officer can be isolated. Additional accommodations should be provided, so that the whole of the two principal floors could be allotted to patients, the lower or main floor and the second floor to the enlisted men. The medical officers on duty should be lodged in an annex, which could be easily built within the present grounds and in connection with the hospital proper, and an appropriation with this object in view should be submitted at an early date.

THE PUBLIC SERVICES.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Oct. 17 to Oct. 23, 1896.

First Lieut. Benjamin Brooke, Asst. Surgeon, leave of absence granted on surgeon's certificate of disability is extended one month on surgeon's certificate of disability.

Major Clarence Ewen, Surgeon, leave of absence granted on surgeon's certificate of disability is still further extended one month on account of disability.

First Lieut. Charles F. Kieffer, Asst. Surgeon (Ft. Crook, Neb.), is granted leave of absence for two months, to take effect upon the completion of his duties with the Third Artillery.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending Oct. 24, 1896.

Asst. Surgeon M. S. Elliott, ordered to naval laboratory and department of instruction, New York.

LETTERS RECEIVED.

Anderson, Winslow, San Francisco, Cal.; Alta Pharmacal Co., St. Louis, Mo.

Bausch & Lomb Optical Co., Rochester, N.Y.; Burr, C. B., Flint, Mich.; Bishop, S. S., Chicago; Burdett-Browntree Mfg. Co., Chicago; Beard, R. O., Minneapolis, Minn.; Bailey, William Curtiss, Las Vegas, N. M.; Boehringer, C. F. & Soehne, New York, N. Y.

Cleary, W. P., New York, N. Y.; Colvin, D., Clyde, N. Y.; Clouse, Geo. M., Columbus, Ohio; Carter, Howard, St. Louis, Mo.; Cutler, H. G., Chicago; Cooper, J. M., Johnstown, Pa.

Dunlap, A. J., Chattanooga, Tenn.; Dewees, William B. (2), Salina, Kan.; Deschamboult, T. A., Manitoba, Canada; Dunshie, J. F., Puerto Barrois, Guatemala.

Erwin, A. J., Mansfield, Ohio.

Gould, George M., Philadelphia, Pa.; Gihon, A. L., New York, N. Y.; Graef, Chas. & Co., New York, N. Y.

Haralson, H. H., Biloxi, Miss.; Holton, Henry E., Brattleboro, Vt.; Holland, John W., Philadelphia, Pa.; Hayes, R. H., Union Springs, Ala.; Harrison, R. H., Columbus, Texas; Hummel, A. L., Adv. Agency (3), New York, N. Y.

Keller, J. M. (2), Hot Springs, Ark.; Kiernan, Jas. G., Chicago; Klebs, Edwin, Chicago; Kendall, H. W., Quincy, Ill.; Kellogg, A. C., Portage, Wis.; Kingsbury, G. C., Mt. Carmel, Ill.

Ludwig, Henry C., New York, N. Y.; Library Bureau, Chicago; Lea Brothers & Co., Philadelphia, Pa.; Millard, M. R., Detroit, Mich.; McAlister, Alex., Camden, N. J.; McCurdy, S. L., Pittsburg, Pa.; Merrick, M. B., Passaic, N. J.; Maltine Mfg. Co., New York, N. Y.; Morton, John P. & Co., Louisville, Ky.; Madden, John, Milwaukee, Wis.; Manley, Thos. H., New York, N. Y.

Porter, Joseph Y., Jacksonville, Fla.; Probst, C. O., Columbus, Ohio; Parker, James W., Warsaw, Ill.; Patterson, C. E., Grand Rapids, Mich.

Reynolds, Arthur R., Chicago; Reynolds, Dudley S., Louisville, Ky.; Riley, W. H., Boulder, Colo.; Radcliffe, S. J., Washington, D. C.; Romeike, Henry, New York, N. Y.

Smith, Louise Eleanor, Chattanooga, Tenn.; Stoakley, Wm. S., Millboro Springs, Va.; Surgeon-General U. S. A., Washington, D. C.; Schofield, A. E., Tilden, Neb.; Strueh, Carl, Chicago; Steele, G. A., Havana, N. D.; Strecher, J. E., Chattanooga, Tenn.; Sheets, John, Philadelphia, Pa.

Tuley, Henry E., Louisville, Ky.

Van Nostrand, D., Company, New York, N. Y.

Woodbury, Frank, Philadelphia, Pa.